ELECTRICAL SOUTH

OCTOBER
1944

FLORIDA

FANS by HUNTER-CENTURY

55th SEASON

52-In Hotel Type

24-In "Airspread" Ceiling

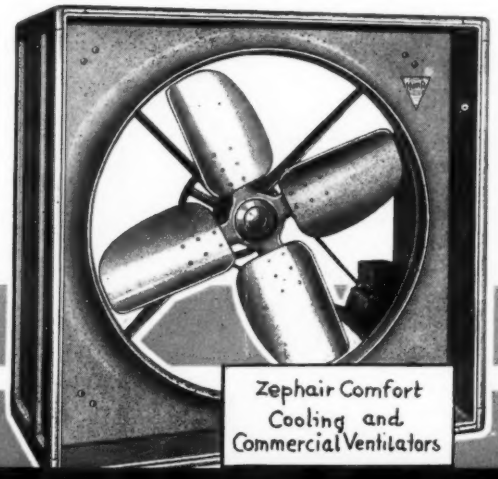
HUNTER, who has made fans and ventilators exclusively during 55 years, is now operating under War Production Board restrictions. • No more fans will be made except for the Army, Navy and Maritime Commission. HUNTER unfilled orders now on hand represent contracts with Government Agencies. • Certain sizes of belted exhaust types can be made available for Government hospitals and other war industries, subject to limited material inventories now on hand.

HUNTER FAN & VENTILATING COMPANY, INC.

Factory: FULTON, N. Y.

General Sales Offices: Memphis, Sterick Bldg. *Eastern Sales Office*: New York, 92 Warren Street *Western Sales Office*: St. Louis, 1706 Olive Street

Sales Offices:
ATLANTA
CHICAGO
DALLAS
HOUSTON
LOS ANGELES
PHILADELPHIA



Zephair Comfort Cooling and Commercial Ventilators

Sales Offices:
BOSTON
CLEVELAND
DETROIT
KANSAS CITY
NEW ORLEANS
PITTSBURGH

WHY HOURS?

✓ HEAT IT

✓ DRY IT

✓ CURE IT

✓ OR GLUE IT

in minutes!

That's right—*minutes*—for radio frequency heating makes minutes do the work of hours. To cite an example: one heating operation that used to take six hours is now being done *in less than 9 minutes!*

The answer is Westinghouse Radio Frequency Heating . . . it creates the heat within the material itself—instantly—uniformly—and under precise control. No waiting for heat to "soak in" . . . no rejects due to heat-damaged surfaces. Applications include wood, chemicals, plastics, paper, rubber, textiles and foodstuffs.

Westinghouse design "packages" all the radio frequency generating equipment and controls into a single, safe, space-saving cabinet.

These units are available in output capacities of 1 kw to 200 kw . . . at a range of frequencies wide enough to meet most dielectric and induction heating needs.

The highly-developed automatic operation turns tricky heating operations into simple "push button" jobs requiring no skilled help.

For more information, ask for Booklet B-3261-A and Descriptive Data 85-800, which describes radio frequency applications, benefits and Westinghouse equipment available. Or, for aid on a specific application, ask for a Westinghouse engineer to call. Westinghouse Electric & Mfg. Co., P.O. Box 868, Pittsburgh 30, Pa.

J-08085

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

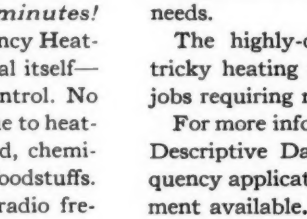
RADIO FREQUENCY HEATING

Electronics at Work

Westinghouse 2 Kw Radio Frequency Generator

This unit is ideal for small work. The "table top" work surface eliminates the need for special worktables, and the controls are conveniently located on the protected sloping panel. Mobility—often highly desirable—is provided by large, sturdy casters.

- Single unit construction
- Automatic operation
- "Long life" air-cooled tubes
- Shielded to minimize radio interference
- Move into position—plug in—and use
- Sturdily built cabinet



ELECTRICAL SOUTH is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga., U. S. A.
Subscription rates, United States and Possessions, $1.00 for one year; Canada, $1.50 per year; Foreign Countries, $2.00 per year.
Entered as second class matter at the postoffice, Marietta, Ga., under Act of March 3, 1879

Volume 24 Number 10

OKONITE RESEARCH DEVELOPMENT
REPORT NO. 23-Y

August 12, 1944

REPORT AFTER 1 YEAR'S EXPERIENCE ON THE EFFECT OF REPLACING NATURAL RUBBER WITH GR-S(BUNA S) IN OKOLITE INSULATION FOR ELECTRICAL CABLES

We have stated in the past that we are fortunate that the results obtained are so generally satisfactory when Buna S is substituted for natural rubber in Okolite insulation. This is largely because of the fact that natural rubber was a relatively minor ingredient of Okolite and the substitution of Buna S constitutes a smaller change in the compound than in the case of rich rubber compounds. The result is that Okolite S, as we will call Okolite when made with Buna S, is much more like Okolite made with natural rubber and can be expected to be more likely the same in service than in the case of compounds which require greater changes in their composition in order to substitute GR-S or Buna S synthetic rubber for natural rubber. It is obvious that any lack of uniformity in GR-S synthetic rubber will have a greater effect on the properties of an insulation compound in proportion to the amount of GR-S in the compound.

ELECTRICAL STRENGTH: Experience in the manufacture of wires and cables made with Okolite S insulation on a commercial production basis is now approaching one year. The results have been highly satisfactory. The Okolite S insulated conductors are subjected to the same high voltage a.c. and d.c. tests as were used for Okolite made with natural rubber. These high voltage tests are the most severe in use in the wire and cable industry. They help to provide assurance to our customers and to ourselves against weaknesses or defects in the insulation.

INSULATION RESISTANCE: A careful review of our routine test results obtained on all of the Okolite S insulated wires and cables made since January 1, 1944, shows that we can now dependably meet minimum megohm values based on a constant of 10,560 for megohms per 1,000 ft. This is the minimum value that we guaranteed for Okolite made with natural rubber.

WEATHERING: Samples of Okolite S insulated conductors without any coverings over the insulation, have been exposed to the sunshine and weather in our proving ground for the past nine months. The Okolite S insulation is still in excellent condition, its outer surface being practically free from checking, and it is equally as good as the Okolite made with natural rubber. We regard the behavior of Okolite S in this sunlight and weather exposure test as a good indication of stability and long life.

MOISTURE RESISTANCE: Tests were made on cable immersed in water for periods up to one year. We feel that our Okolite S insulation as now manufactured with Buna S is equal in moisture resistance to Okolite manufactured with natural rubber and possibly with further experience this can be still further improved.

The table below shows a comparison of important characteristics of Okolite S versus Okolite made with natural rubber. The results given in this table are as obtained in numerous tests made on the two compounds. It will be observed that there is no important difference in any of the properties covered by the table.

PROPERTIES OF OKOLITE INSULATION NATURAL RUBBER VS. GR-S

	Okolite (Natural Rubber)	Okolite S (GR-S)
Tensile Strength-p.s.i.	525	525
Elongation-inches	2 to 8	2 to 8
Resistance to Cold	Fair	Fair
Heat	Excellent	Excellent
Ozone	Excellent	Excellent
Oil	Fair	Fair
Sunlight	Good	Good
Flame	Poor	Poor
Moisture	Excellent	Excellent
Dielectric Strength-Volts/Mil	400-500	400-500
Insulation Resistance Constant (1000ft.,60°F)	15,000	14,000
Dielectric Constant (60 Cycle-80 Volts/Mil)	4.2	4.0
Power Factor-Per Cent (60 Cycle-80 Volts/Mil)	3.0	3.0

We can feel assured, as far as can be determined by such limited experience as we have obtained in 1 year of actual production, that Okolite S has all of the excellent properties and high quality of Okolite made with natural rubber.

CKOLOY Corrosion-Resistant Conductor Coating: Another important point in connection with Okolite S insulated wires and cables is the fact that the conductor coating is our standard Okoloy with which there have been many years of satisfactory service experience.

The above report is excerpted from a recent comprehensive report of the Research Laboratory of The Okonite Company, Passaic, N. J., manufacturers of insulated wires and cables.

Hear and enjoy this brilliant new radio program

"THE ELECTRIC HOUR"

Starring

NELSON EDDY

WITH ROBERT ARMBRUSTER'S ORCHESTRA, GUEST STARS AND CHORUS

WEDNESDAY, 10:30 P.M., EASTERN WAR TIME
ENTIRE COLUMBIA NETWORK

• Twice voted radio's "Star of Stars," Nelson Eddy is also a screen and concert favorite with a wide following. His golden baritone, plus Robert Armbruster's 35-piece orchestra, plus a chorus and guest stars, all add up to a *popular* program packed with good music and good humor.

Woven into the entertainment are friendly, factual messages about America's *business*-managed light and power companies. They reach electric customers everywhere and will contribute to a clearer understanding of the industry's aims and accomplishments.

This grand new show extends and strengthens the continuing program of publication advertising in *The Saturday Evening Post, Collier's, Life, Time* and *Newsweek,* as well as business and farm magazines.

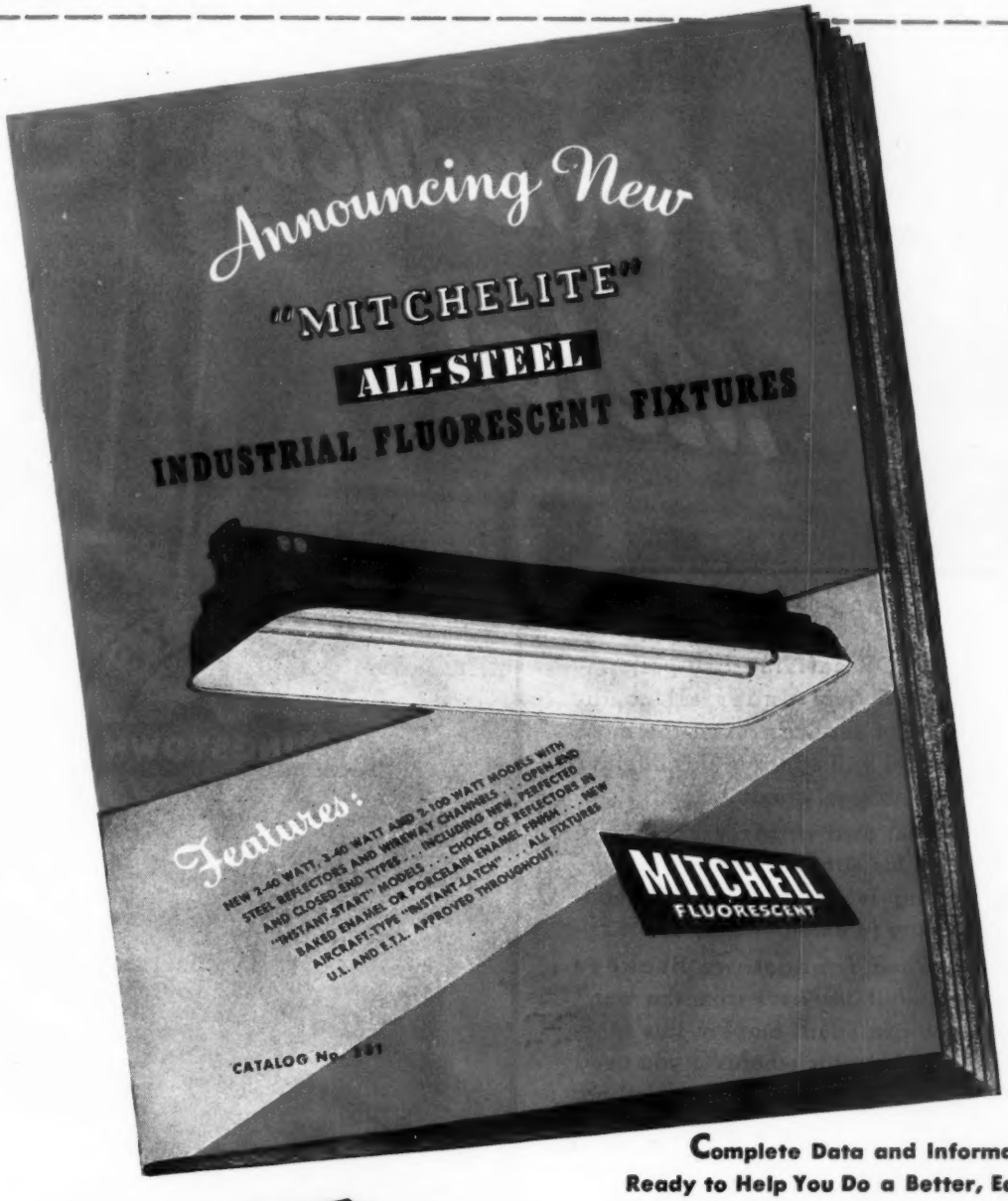
With an outstanding star and a talented supporting cast, "The Electric Hour" is one of the best shows on the air. Hear it yourself and ask your friends to listen. It deserves the support of the entire industry because it advances the interests of the entire industry.

160 ELECTRIC LIGHT AND POWER COMPANIES*

SELF-SUPPORTING, TAX-PAYING BUSINESSES

★NAMES ON REQUEST FROM THIS MAGAZINE

Ready Now GET YOUR COPY OF THE NEW MITCHELL CATALOG NO. 281


Announcing New
"MITCHELITE"
ALL-STEEL
INDUSTRIAL FLUORESCENT FIXTURES
Features:
NEW 2-40 WATT, 3-40 WATT AND 2-100 WATT MODELS WITH STEEL REFLECTORS AND WIREWAY CHANNELS . . . OPEN-END AND CLOSED-END TYPES . . . INCLUDING NEW, PERFECTED "INSTANT-START" MODELS . . . CHOICE OF REFLECTORS IN BAKED ENAMEL OR PORCELAIN ENAMEL FINISH . . . NEW AIRCRAFT-TYPE "INSTANT-LATCH" . . . ALL FIXTURES U.L. AND E.T.L. APPROVED THROUGHOUT.
MITCHELL
FLUORESCENT
CATALOG No. 281

Complete Data and Information Ready to Help You Do a Better, Easier Industrial Lighting Job!

MITCHELL FLUORESCENT

Get Catalog No. 281 from your MITCHELL DISTRIBUTOR *or write us today!*

MITCHELL *Manufacturing Co.*

2525 CLYBOURN AVE. • CHICAGO 14, ILLINOIS

FOR SAFETY'S SAKE . . . USE CONDUIT *(Full Weight Rigid Steel)*

FOR satisfactory performance of duty under all conditions of service... even the most critical will approve this citation of rigid steel conduit.

Neat and orderly appearing! And for strength and endurance, rating is the highest. Dependability in emergencies, 100%.

When Youngstown Buckeye Conduit is "back from the war," you can again employ this veteran protector wherever you need to give your wiring jobs unfailing, enduring protection.

BUCKEYE TRADE MARK YOUNGSTOWN CONDUIT

Ask your distributor for:
Youngstown Buckeye Conduit ... Pipe and Tubular Products ... Sheets ... Plates ... Electrolytic Tin Plate ... Bars ... Rods ... Wire ... Nails ... Tie Plates and Spikes

YOUNGSTOWN
THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN, OHIO
Manufacturers of
CARBON · ALLOY AND YOLOY STEELS

Order of the day . .
PREMIER
DeLuxe
. . the famous PREMIER
• The growing swing from incendiaries to irons, from torpedoes to
cleaners, from earbines to cleaners is the order of the day as total Victory
nears. [illegible] orders welcomed by all the women who've cheerfully
armed forces needed the full

ARE YOU READY FOR IT?

Advertisements of the type shown above are appearing in The Saturday Evening Post, Ladies' Home Journal and Good Housekeeping.

The order of the day, as final victory draws nearer, is reconversion to meet the needs of peacetime living. New Premier Vacuum Cleaners will once again be available—sooner than expected, perhaps. Already announcement has been made of Premier's new distribution policy—and of the splendid list of independent specialty appliance distributors who will carry it out throughout the Nation. Already women have been urged through advertising in such magazines as Good Housekeeping, the Ladies' Home Journal and The Saturday Evening Post, to place their "order" now for a new Premier—to discuss all their appliance purchase-planning with you. *Are you ready for it?*

If you haven't yet made arrangements to be a Premier dealer, get in touch with the distributor who will serve you—or write us. The order of the day in your case is "Don't delay another day."

If you haven't received your copy of the new booklet, "Your Future as a Premier Dealer," send for it at once.

GUARANTEED CERTIFIED SERVICE For Vacuum Cleaners

ARMY E NAVY

PREMIER

DIVISION

ELECTRIC VACUUM CLEANER CO., INC.

CLEVELAND 10, OHIO

Electrical Wiring *comes first!*

Every electrical utility will benefit from Anaconda's national advertising campaign

ANACONDA's advertising campaign is aimed at creating a sounder basis for your postwar business. It urges postwar planners to allow extra capacity in wiring plans. It puts the spotlight on the big increase in the demand for power and equipment sure to come.

Don't overlook the opportunity to tie in with this special campaign. Plan now to get a maximum share of its benefits. Link your own promotion to your local adequate wiring bureau activities and Anaconda's basic advertising theme: It's always wiser to Wire Ahead!

Know where that postwar plan of yours ought to START?
In postwar planning...
How many "VICTORY" JOBS will result from...
IT'S ALWAYS Wiser TO Wire Ahead
WESTERN UNION
ANACONDA WIRE & CABLE COMPANY

BUY MORE WAR BONDS

• Full pages like these, in color, appear regularly each month in Time, Newsweek, Business Week and leading industrial publications read by America's foremost postwar planners.

ANACONDA WIRE & CABLE COMPANY

25 Broadway, New York 4... Sales Offices in Principal Cities

Electrical Wires and Cables of Copper are the Life Lines of our Nation

ELECTRICAL SOUTH

..VOL. 24 OCT. 1944 NO. 10

T. W. McALLISTER, *Vice Pres., Editorial Director*

CARL W. EVANS, *Editor*

BARON CREAGER, *Southwestern Editor*

J. C. MARTIN, *Business Manager*

W. E. COOGLER, *Production Manager*

In This Issue

Postwar Trends in Retailing	9
Installation Customers Now Maintenance Accounts	12
Customer Confidence Gained with Service	14
Time-Saving Tools for Motor Service	16
Package Kitchens in Postwar Selling Plans	18
Maintaining Industrial Electrical Equipment	20
Appliance Condition Indicated by OCR Survey	24
Construction Services Price Control Clarified	28
Electrical Industry Pioneer Passes	31
News of the Electrical Industry	32
Government News and Views on the Industry	42
Personal Notes About Men You Know	48
New Electrical Equipment and Materials	53
New Electrical Books	57

Copyrighted 1944, *W. R. C. Smith Publishing Co., Atlanta, Georgia*

Member A. B. P. — A. B. C.

ANNUAL SUBSCRIPTION—$1.00

Business Representatives

L. E. ALLEN, 189 W. Madison St., Chicago, Ill. Tel. Lakeview 10282.
L. R. McCARTY, 325 Winding Way, Merion, Pa. Tel. Merion 1066.
W. A. McGEE, Post Office Box 562, Charlotte, N. C. Tel. 3-4932.

Published Monthly by

W. R. C. SMITH PUBLISHING COMPANY

Atlanta and Marietta, Georgia

Editorial and Business Offices

Grant Building, Atlanta, Georgia

W. J. ROOKE, *President;* T. W. McALLISTER, *First Vice-President;* E. W. O'BRIEN, *Vice-President;* RICHARD P. SMITH, *Vice-President;* A. E. C. SMITH, *Vice-President;* J. C. COOK, *Vice-President;* O. A. SHARPLESS, *Treasurer;* J. C. MARTIN, *Secretary;* SEBA J. JONES, *Assistant Secretary and Treasurer.*

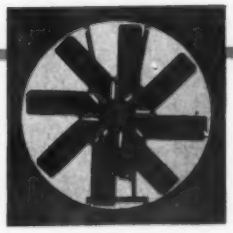
Publishers Also of

SOUTHERN AUTOMOTIVE JOURNAL — COTTON
SOUTHERN POWER & INDUSTRY — SOUTHERN HARDWARE

It's IMPORTANT

That You Take Orders NOW !

Coolair TRADE MARK



EXHAUST FANS and BLOWERS

Wise dealers are continuously on the job every day soliciting orders — and *selling* orders for COOLAIR Fans and Blowers! We are in the position to handle your orders on an "order first — shipment first" basis, so it is important that you help your customers anticipate their needs early — and order early!

CONTACT ALL PROSPECTS NOW

- because—CMP Regulations permit almost any type of business, able to certify that the equipment they order is necessary to the successful operation of their business, to assign their own preference ratings on purchases up to $500. Form WPB 541 (Formerly PD-1A) can be filed for orders in excess of $500.
- because—many Government orders are still available to wide-awake dealers who keep in touch with these prospects.
- because—by selling your customer on an "order first—shipment first" basis, he will be assured of as prompt delivery as possible.

DON'T DELAY — START TODAY . . .

contacting every likely prospect. We will be glad to help you with any priority problems that may arise. Send for a supply of the latest Coolair literature and the 1944 price list.

A full description of the Coolair line, with tables showing models, dimensions, performance data, etc., can be found in SWEET'S CATALOG A.S.H.V.E. GUIDE ELECTRICAL BUYER'S REFERENCE

AMERICAN COOLAIR CORPORATION . . . Manufacturers

3604 MAYFLOWER STREET

JACKSONVILLE 3, FLORIDA

Above: (FA) Dust-tight Power Panelboard with 225 and 600 Amp Frame Circuit Breakers.

Where DUST is a HAZARD

exposed arcs may set off disastrous explosions. Guard against this danger by installing

(FA) DUST-TIGHT Light and Power PANELBOARDS

Below: (FA) Dust-tight Lighting Panelboard and Cabinet for wall or exposed column mounting.

They are approved by Underwriters' Laboratories, Inc., for "Class II, Groups F and G, Hazardous Locations." This includes coal mines, coal processing plants, shell-loading plants, grain mills, and other places where dust is a dangerous factor.

These panelboards have a solid steel front plate, gasketed all around, and secured with screws to an extra wide box flange. They are further rendered dust-tight with welded hubs for conduit outlets, welded box corners, and handle bushings riveted directly to the steel cover plate. External mounting brackets are provided, to maintain the dust-tight construction.

The circuits are externally operated by a mechanism of new (FA) design. The handles operate through dust-tight bushings, and engage the regular handles of the circuit breakers inside the cabinet. ON and OFF positions are indicated on the front of the cabinet.

(FA) Dust-tight Panelboards are of the circuit breaker type. Capacities of Power Panels: 15 to 600 amperes, 250 volts AC or DC, and 600 volts AC. Lighting Panels, standard or narrow column type, equipped with (FA) Type AC Thermag or (FA) Dublbrak Circuit Breakers (or other types of ranch-circuit circuit breakers). Available with 4 to 42 circuits, 50 amperes or less, for 3 wire, single phase, or 4 wire, 3 phase mains, with lugs only, or main breaker.

Write for Bulletin 67

which contains descriptions, sizes, capacities, wiring diagrams, prices and suggested specifications . . . Frank Adam Electric Company, Box 357, St. Louis 3, Mo.

The same form of construction but with rubber (or equivalent) type of gasket is available for VAPOR PROOF installation.

Frank Adam
ELECTRIC COMPANY
ST. LOUIS

How different will retail selling be in the postwar era? Mr. Newcomb sees no radical changes but cites many lessons which the industry should have learned in the interim when it had nothing to sell but service. He anticipates bigger, and better, and more full-line electric appliance departments and that they will be much more uniform and standardized as t brands.

Postwar Trends in Retailing

By T. J. Newcomb*

ALL OF US are reading ourselves blind and traveling around the country listening to would-be speeches in an effort to learn something. After taking it all to the light we find that most of it we could have written ourselves or heard over our own back fence by staying at home. In any event, a great deal of it is tinted with some "wishful thinking" that reflects to the selfish benefit of the author. For example, it is most difficult to listen to the alluring optimism of the postwar electric appliance business, and stand on the threshold of being a part of it, without hoping that it takes a trend covenient and beneficial to our own selfish interests.

To add to the confusion, we have a group that I refer to as the "mourners' bench," who sit there shedding tears as big as gumdrops over allegedly unfair trade practices. They, along with others, are the advocates of an "assured" success—by legislation—be it socialized or "racketized." Their tireless efforts are rapidly deenergizing themselves right out of the free enterprise privileges of a competitively successful opportunity.

Another popular and confusing subject of controversey is that broad one of distribution and its allegedly high costs. Now, I do not disagree for one moment with the fact that there is plenty of room for improvement and increased efficiency in the channels of distribution. Yet, I sense that a lot of the thinking is along the lines of "let's plan it differently for postwar"—just because, again, it is socially correct to be planning most everything differently. Many approaches also appear to be tinted with that "wishful thinking" and "selfish benefit" flavor, or, as merely the result of "once-over-lightly" analysis. Rarely is the subject approached in its full scope of direct and indirect influences of all participants.

In thinking of distribution and its costs, I view it as a three-way responsibility — manufacturer, distributor and retailer — with each having a continuing obligation toward increased efficiency and lower operating costs. I do not believe that any one of the three can say to another one—"What are you going to do about it?" The question should be—"What are the three of us going to do about it?"

There are, of course, those who say the solution is simple—all you

*Sales Manager, Electric Appliance Division, Westinghouse Electric and Mfg. Co., Mansfield, Ohio.

need do is cut the distributor's throat and throw him out of the picture. Well, maybe that is the answer, but how long will it be after that before someone advocates cutting the retailer's throat and doing everything by mail. This is obviously far-fetched but if low cost is all we are striving for I suppose that from manufacturer direct to consumer is technically the irreducible minimum. I am afraid, however, that this method would make the world rather drab and dreary, and certainly be a blow to all those postwar "dream products" we hear so much about.

Personally, I am not an advocator of anybody's throat being cut and I do not think it is necessary. I firmly believe that the manufacturer-distributor-retailer type of distribution has proved itself to be a constructive force in making this country of ours the most progressive in all the world. It pioneered and brought new and modern conveniences to the cross roads of America as well as to the city "slickers," and the cost in terms of total service rendered was certainly moderate.

Now, I reiterate, that there is room for improvement and it's due time that all three of us take a good look at ourselves in terms of how we can be more efficient. In some cases it only means being as efficient as we already know how to be—you know the old "wheeze" of the farmer who was being pressured to buy some fancy catalogues and books on how to improve his farming, who said, "Look a' here young feller, I don't need them 'ere books; I ain't a farmin' half as good as I know how to right now." Even though it is an old "wheeze" it still may have a moral to it for some of us.

Cooperation of "Three-Way Team"

In any event, I think it suggests that our "three-way team" must develop a closer association and a better understanding of each other's problems; we must eliminate wasteful subterfuge; we must orient our individual responsibilities and eliminate duplications of effort; we must perform our responsibilities efficiently and eliminate ineconomics, and we must time-study our costs and apply only reasonable profit margins.

If we approach these basic fundamentals with intelligence and sincerity and evaluate them over a span of years and not just to some favorable short-term seller's market, I feel confident we will learn that there are definite functions for each of us to perform, that we can be of service to each other without duplication of effort, that we can be more important to each other, and that our efficiency can be improved. In addition, and most important, I am sure we can adequately and economically serve the consumer's needs.

The Competitive Picture

Now there is one more trend in the confusion classification that I should like to comment on, because it also can become a serious challenge. It's the competitive picture. To say the least, it it kaleidoscopic from most any angle we view it. For example, there currently seems to be no race, creed, type, size, or quality of retail outlet that isn't planning to be in the electric appliance business. The same applies to the distributing and manufacturing ends of the business. It's quite apparent that we will have all of those that existed prewar and some new ones that are sufficiently experienced to qualify.

In addition, however, I sense that we may be knee-deep in "neophytes", from which most anything can happen. From the manufacturing angle there will be products, some of which may be attractive in design and price, but loaded with latent maintenance liabilities. Combine this with distributor and retail distribution that may be inexperienced or have an intent to "buy their way into the market" and we might be confronted with tactics and policies slightly on the "screwey" side.

These trends need not be discouraging. Any business that can attract such a widespread interest is a good place for my "dough" and effort—any time—anywhere. Electric appliances as we knew them prewar had a consumer acceptance far beyond their availability. In both 1940 and 1941 there was a demand far exceeding supply and this demand has been pyramiding and will continue to do so until they are again available.

You can add to all of this the fact that many of the most practical prewar electrical appliances are still in their infancy, to say nothing of new ones that may be developed. Take the electric range for example. It has a national saturation of only about 13 per cent of wired homes. Yet, its growing consumer acceptance is definitely established by the fact that in 1933 its chief competitor—the gas range—sold at a ratio of about 15 gas to 1 electric. In 1941—eight short years later—the ratio was reduced to about 3 to 1.

Now let's take another item—the electric water heater. It has a saturation of only about 4 per cent of wired homes. It too has a growing consumer acceptance and will have, in my opinion, a tremendous impetus in the postwar era. The chief contributing factor will be the rapid development of automatic cycle laundry equipment and the emphasis that will be placed on the modernization of the home laundry.

Another item that will work for the water heater will inevitably be the electric dishwasher. Admittedly, it isn't a high demand item at the moment but the market is there just as soon as the real approach and product are developed to meet it. Both of these items mean hotter water and more of it.

So, I believe that the public is going to be far more conscious of hot water convenience, and certainly electric water heaters should be an acceptable source of supply.

Automatic Washer Experience

Now again referring to the automatic washer, experience has proved that with the ease and convenience of the automatic way, the housewife does more if not all of her laundering in the home. This fact, plus the high water extraction principle, makes the electric drier a perfect running mate. Together these two items will revitalize an interest in the electric ironer, and an improvement in its usability and acceptance. It behooves us, therefore, to give the modern home laundry of "postwar" a high rating in our plans. It will unshackle Mrs. Housewife from the bonds of drudgery and open up a new and plus opportunity for all of us.

Then we have that rapidly growing interest in frozen foods. This will reflect in adaptations to the domestic type of refrigerator, and open up a brand new companion market with various types of frozen food cabinets for domestic as well as commercial use.

And by all means, let's not minimize the importance of those small or table appliances. I think many of us have failed to recognize what an advertising and satisfied-user benefit they can be to the large

or major appliances. We never know how many major appliances are purchased because Mrs. Housewife is a satisfied user of a flat-iron, roaster, or toaster, etc., of the same make—yet, many of us place all our emphasis on the so-called "big-ticket" items. I see a strong trend in the direction of complete and well displayed lines of table appliances in conjunction with major lines, and in large stores I believe they will be shown and sold in more than one department. The "full-line" approach, where one sale can aid and abet the sale of another of the same brand, has already proven itself to be sales building and less confusing to the consumer.

I could go on enumerating other electric appliances, both old and new, that await our common interest in the postwar era, but publicity and the results of countless consumer surveys certainly confirm that plenty of attractive products are in the offing and that consumers have a sincere interest in owning them. Therefore, I reiterate that, despite our ability to cope with some of the uncertainties, and despite the kaleidoscopic competitive picture, the obvious potential in the electric appliance field highly recommends it as a good investment for time, effort, and money.

But, I don't believe any of us can "slop" our way into success or ride in on a golden chariot drawn by four "lily-white" horses. Nor can we say, because we are already in the business, that there is nothing for us to do but coast along complacently, putting a nickel in the slot now and then, with a self-satisfied assurance that the "jack pot" is automatically going to shower down on us. To be sure, there are many things that only time can solve, but there are many more that we can be doing something about, right now. Yet, we can easily become the victims of indifference and procrastination.

The Job to Be Done Now

If we are to progressively succeed, then we must continuously be alert to doing today's little things to make tomorrow's big ones easier. Current examples are little customer courtesies—the exercising of patience and explanatory reasoning in response to the impossible requests for immediate service—courtesy over the telephone—courtesy when they demand products that are long since unobtainable.

T. J. Newcomb

Sure, there's a "war on" and many customers are absurdly unreasonable, however, it will pay big dividends if we fool them by responding with courtesy and smiles.

In addition to those little courtesies that we should be employing as a daily habit, there are other things we should be planning and preparing. Take our sales organization for example—there is no phase of any business that has distintegrated so completely and definitely in this war period as the sales organization. Most of the salesmen have gone to war, taken war jobs, or been fired. The few that are left are rotting on the vine with bloated indifference. Yet, when that evil postwar day of supply exceeding demand really arrives, a well trained, hard hitting sales organization will be our only salvation.

This war has developed a wealth of engineering ability, a wealth of manufacturing ability and a wealth of productive capacity—but it still may be possible to starve in a land of plenty. Many former salesmen have entered those ranks and many may want to stay here. As long as demand exceeds supply, business management can be reluctant to train and build up a selling staff. Yet, all of us know, maybe to our sorrow, that a real sales organization cannot be whipped together, fresh from the morning's milk. Products may be changed, policies may be different, terms, prices and a host of conditions can prevail that require thorough training, seasoning and experience, before a salesman can be productive for himself or his employer.

Therefore, it seems none too early to at least plan the rehabilitation of sales organizations and selling methods. I place considerable emphasis on the selling end because I am not a subscriber to the popular prediction that pent-up demand and stored up wealth is going to take merchandise away from us for too long a period. A "buyer's" market can develop much quicker than we expect, and perhaps "wishful thinking" at that time may be too late.

So, let's do a little anticipation and, even though we may be wrong, we may find comfort in a preparedness that will avoid wasting our wishes.

Now I should like to take a few minutes to explore some psychological trends that deal with our approach to the electric appliance business and our attitude toward the consumer.

I believe in this war period that the old axiom—"You never miss the water till the well runs dry" aptly applies to the loss of the electric appliance business. There were a great many who in prewar treated it rather casually, and I am beginning to suspect that many accounting procedures must have bordered on the nefarious. In any event, it was allegedly referred to in many circles as being quite a headache and definitely unprofitable. Yet, "when the well did run dry" sorrow seemed to prevail in large clusters and now that "water" again seems to be in the offing the crop of "drillers" or at least "surface drillers" is terrific.

What We Should Have Learned

Seriously, I believe that the "dry" period gave many of us an opportunity to reflect on some of our omissions and realize that "we might not have been farming half as good as we knew how to," for sure. As a result, and particularly from a retail angle, I believe we are going to see bigger, better and more full-line electric appliance departments, and that they will be much more uniform and standardized as to brands. This seems a very practical trend toward eliminating the consumer confusion that must exist when they are confronted with a multitude of brands and assortments.

One of the best definitions I have ever heard is that "good salesmanship is helping a prospect make a buying decision," and it certainly seems that we are a long ways afield when we confront both the salesman and the consumer with a

(Continued on page 61)

NEW INSTALLATION CUSTOMERS NOW MAINTENANCE ACCOUNTS

La Vigne Electric, of Miami, Florida, has solicited with good results the maintenance of electrical jobs it has installed; finds it steady year-in-year-out volume builder.

STEMMING from the constantly growing employment of electrical equipment of all types for industrial and commercial use is a double-barreled opportunity for electrical contractors. In addition to 'new business," there also is potential *extra* volume in the maintenance of equipment already installed.

Over a period of years, LaVigne Electric, of Miami, Florida, consistently has solicited the maintenance of its own installations. During normal times, the firm handled many special lighting jobs, such as theatre and store display illumination.

A high percentage of the customers thus served now are on the LaVigne books as maintenance accounts. To this volume has been added the servicing of electrical apparatus installed by other contractors who apparently for one reason or another did not care to undertake its maintenance. As the result, LaVigne currently has 5 trucks and an average of 12 men in its maintenance.

Resulting from "service" as a business builder, there is a considerable amount of what may be called subsidiary installation work. For example, the firm installed the electrical wiring and fixtures in a large new office building. On the structure's ground floor is a bank which from time to time has required changes in or additions to its electrical setup.

Tenants, too, have needed electrical alterations to suit individual requirements. This has been especially true of physicians and dentists who have wanted to install electrically - operated apparatus. The expansion by a tenant of his office space or a major re-arrangement of his equipment usually necessitates electrical work. Tenant replacements also bring about the need for electrical service, such as lighting changes or the installation of new outlets.

By Harrie H. Bierman

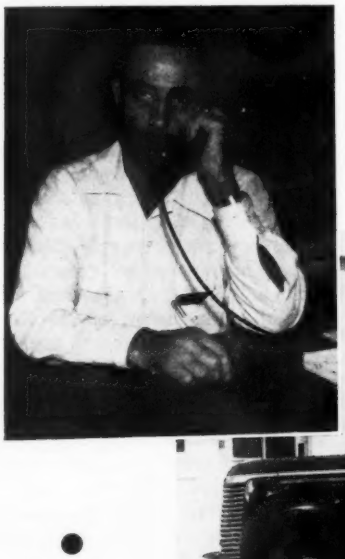
The firm furnishes maintenance service for air conditioning apparatus, store and theatre lighting and electrical motors. In connection with the last named, the concern does not make major repairs, such as the replacement of windings, but channels this type of work to shops which specialize in it. The firm services electric fans for its regular customers but does not service other kinds of electrical appliances. Repairs on these, too, are assigned to "specialists".

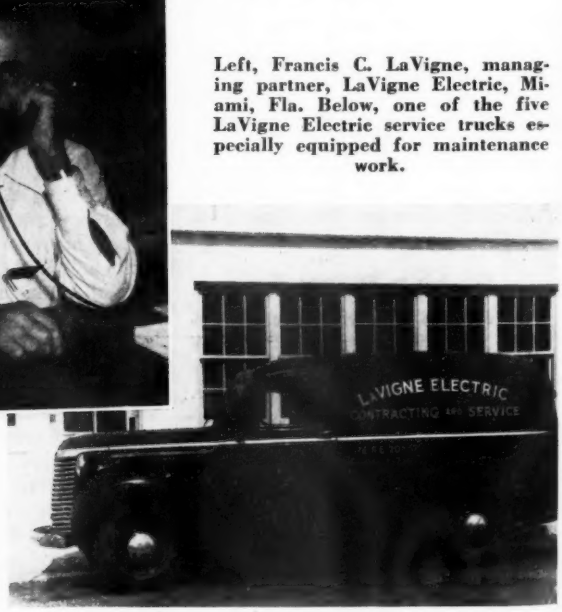
LaVigne Electric's maintenance clientele includes three movie-theatre chains collectively operating over 30 theatres, local units of a shoe-store chain, several women's wear stores, units of drug and of dime store chain systems, a silverware manufacturer's warehouse and downtown display room, and a beverage plant. All maintenance work is billed on time-plus-materials basis.

Some of the theatres above mentioned are equipped for stage productions. In these cases, the maintenance of stage lighting is taken care of by regularly employed stage electricians. LaVigne services all other electrical installations — air conditioning apparatus, electric signs and interior lighting. And the firm handles any stage lighting jobs—new installations or alterations—which involve the bringing in or changing of outside current-supply lines.

The largest of the women's wear stores referred to is sizeable and has an elaborate window-display lighting setup. Servicing this and the store's interior illuminating system requires practically one-half of one electrician's time.

Most of the firm's clientele has fluorescent lighting. The maintenance of this occupies the full-time use of one truck and the services of one man—a specialist in this type of work.





Left, Francis C. LaVigne, managing partner, LaVigne Electric, Miami, Fla. Below, one of the five LaVigne Electric service trucks especially equipped for maintenance work.

Perhaps LaVigne Electric's largest single maintenance job is the servicing of its large beverage bottling account. This customer's plant is housed in a 5-story structure covering an entire city block. The plant's operation, much of it automatic or semi-automatic, is all electrically powered. Equipment includes two conveyor systems, pumps for various uses, rotary setup. The connected load includes 75 motors ranging from a minor fraction to 25 hp.

The bottling department, alone, utilizes 25 motors varying from 1/6 to 15 hp. Electric current really does a job here. Operations are wholly automatic. Empty bottles go by conveyor from the unloading platform to the bottling section, where they are fed into the machinery by hand. No other manual labor is needed until the filled bottles are placed in cases which are automatically conveyed to the loading dock. Processing by the bottling mechanism includes washing and sterilizing of "empties", refilling, pasteurizing, and labeling. Powered by a 1 hp. motor, the pasteurizing unit handles 9,000 bottles per hour.

The electrical servicing of this plant requires practically the full time of two LaVigne electricians. Most of the powering equipment and wiring is 10 years old or nearly so. For sanitary reasons, all floor surfaces in departments where the product is prepared or handled in any way are washed every day, and all processing equipment also is thoroughly washed with running water daily.

Therefore, water and moisture-saturated air represent an ever-present hazard to all parts of the plant's electrical setup, in spite of the fact that, wherever practical, wiring protection and outlets are of water and vapor-proof types. Still another element which steps up the plant's electrical-servicing need is the fact that, in recent years, motors have been operated at maximum rated loads.

One of LaVigne's more spectacular installing jobs, which the firm services on a seasonal basis, is a South Florida race-track installation. Electrical equipment includes lighting of stable's, a club house and other parts of the "plant", plus certain types of delicate, electrically-powered apparatus. Among the last mentioned items are a timing device, an "odds board" and a totalizer.

Portable, motor driven pumping unit works in moisture-saturated air. Note vapor-proof plug-in connection at upper center.

The timing device "clocks" the horses and shows their running time in lights. The totalizer is an intricate mathematical machine which automatically records wagers, adds the amounts wagered on each horse, each race and for the day and carries the total results to the "odds board", where they appear as illuminated figures.

Since a fixed portion of the daily totals shown by the totalizer goes to the State, as taxes, the importance of keeping this complex, electrically-controlled mechanism working uninterruptedly is readily apparent. Consequently, on racing days the firm keeps a staff of 5 "standby" electricians at the track, in order that any electrical trouble which might develop may be traced and corrected immediately.

"We find," explains Francis LaVigne, managing member of the firm, "that selling electrical servicing to customers for whom we have installed wiring and other electrical equipment offers few difficulties.

"We have only to point out that because we already are familiar with circuits and circuit-controls, we are able to save trouble-hunting effort. Therefore, since electricians' time is an important part of maintenance cost, we can service the installation at minimum expense."

Maintenance aimed especially at the elimination of all possible fire hazards appeals to some customers, particularly chain-store systems. In some instances, this service takes the form of a periodic check-up on all potential danger sources.

The firm's service trucks are equipped to handle almost any type of minor repair. In addition to necessary tools, they carry wire in sizes from No. 8 to No. 14, small conduit, fuses and similar items. "Special purpose" trucks have the equipment needed to take care of the particular type of installations they service. For example, one electrician specializes on industrial installations. The truck he operates carries, among other articles, a portable electric drill, block and tackle, disconnect switches, a motor starter, a voltmeter, an ohmmeter and other test instruments.

(*Continued on page 60*)

Customer Confidence Gained with Service

By Richard Lane

ONE PRIME element of profitable electrical appliance business in the postwar era must be the development of customer confidence by dealers—confidence that has been shattered to some extent in this trying period.

It's no secret that dealers are finding customers simply aren't swallowing the line that everything that goes wrong with an appliance now is due in large measure to the war. Some are throwing the blame squarely on the product itself, with serious repercussions for the dealer, jobber and manufacturer. This is particularly true in the case of frequent breakdowns, even when the appliance is feeling the inevitable infirmities of age.

Often coupled with the customers' ill will as a result of breakdowns is the lack of understanding by the parts dealer or jobber.

How are the electrical appliance men going to solve this knotty problem and cash in on the lucrative postwar business? Admittedly, if manufacturers and dealers during the postwar period can make their appliances stand up in performance, they are going to find that it pays.

Sommers - Brown, Memphis, Tenn., appliance company, has noted a weak link in customer service where there is a tendency for the jobber not to be a specialist in parts and therefore unfamiliar with many of the most common problems met by appliance users. Sommers-Brown finds that this is particularly true of the larger catalog houses which have no time for concern with such problems, passing them on to the dealer. Sommers-Brown intends to do something about it and is not waiting for the war to end. The company is laying its plans well ahead and wisely, with emphasis on repairs.

Believing that two viewpoints are better than one, Sommers-Brown intends to become a jobber as well as continuing as a dealer, although the two businesses will be divorced. The company is adjusting its present business accordingly to better meet customers' demands both now and later. It's well-equipped, wartime added repair department is an example.

As A. J. Rouleaux, manager, puts it:

"We see the retail end of the appliance business as the proving ground for dealers' problems in selling, servicing and repairs. We also feel that the jobber who is going to specialize in major appliance service will be able to help the dealer back up the qualities advertised by the manufacturer.

Jobber Important Factor

"From past experience, it has been proved that the jobber is a very vital factor in distribution and service.

"We are jobbing now in some lines—space heating equipment and kitchen ranges — and find that where we tell our customers that we have our own service department to give them what they are looking for — efficient operation — it has profound effect. There is a willingness to buy and tell their friends.

"Just like many prewar appliance dealers, service was secondary with us. When the war brought on new conditions in the appliance business and jobbers were forced to take on new lines in order to keep going, the burden naturally fell on the dealers. The customer now holds the dealer responsible for the things he buys. We have to stand back of our sales. And to do that successfully, we have to give efficient, high quality repair service.

"Experienced refrigerator repair men particularly have been hard to find in the Memphis area. We were able to obtain several for our service department only by offering a rate of pay that cut our margin of profit sharply. Sommers-Brown has been willing to string along with a lower return than ordinary simply because we are looking forward to the prewar era and realize that such service will pay added

Service man of Sommers-Brown, of Memphis, working on hot plate. Note fans on bench. This repair shop is war-born—organized to take care of customers' demands. This dealer hopes to use it as a means of building up customer relations in preparation for postwar market.

dividends in the long run.

"By backing up manufacturers' claims—on many items that we do not sell, too—we are confident that we will build up customer good will and consequently more sales. When a person's electrical appliance is expertly repaired in these times of scarcity he is not likely to forget it when it comes time to buy a new one. That's what we are aiming at through our repair service department—the privilege of selling a new appliance to that satisfied customer when he is able to buy a new one." In order to keep refrigerators operating in Memphis homes, in conjunction with the Government Emergency Refrigeration Service Council, Sommers-Brown and other electrical appliance concerns and refrigerator dealers have the immediate aim of retaining as many of the present force of repairmen as possible and attracting more men into industry both by recruiting and training.

More than 100 persons are now studying refrigeration and allied subjects at the Memphis Vocational School, and the War Manpower Commission is squarely behind the project.

The council, besides recruiting and training repair men, is weighing dealers' problems constantly. Such mutual understanding benefits the dealers and in turn is passed on to the manufacturer eventually.

Sommers-Brown and the other appliance service men have found that the biggest need of the industry, particularly in repairing refrigerators, is for standardization of parts.

"Standardization would help tremendously in servicing of all equipment," Rouleaux points out. "This is being demonstrated every day, more so than at any other time in history."

Sommers-Brown, now servicing all makes of refrigeration units, washing machines and small traffic items such as irons and toasters, has a big backlog of repair items like all its competitors.

Service man working on water cooler at Sommers-Brown. The company repairs all makes of refrigerators, vacuum cleaners, irons, and other appliances. Below, another view of the service shop.

In the postwar picture, Sommers-Brown sees need for a lot of underselling as well as overselling.

"Too many persons have been led to believe that countless marvelous appliances will become available immediately after the war and at prices in reach of the average buyer," Rouleaux comments. "A lot of this has been 'hot air'. The public should be told exactly what it can expect in the way of appliances."

Rouleaux who had 30 years experience in the sales organizations of Atwater Kent, Philco, G. E. Supply and General Electric before trying the retail side of the business, believes the appliance dealer could be a major factor in postwar distribution planning and could have a lot to say about it, too.

It is through experience gained with a dealer, however, that has made Rouleaux more aware of what the dealer is actually up against. He has met problems that were never encountered during his association with leading manufacturers. He now can visualize dealers' problems, and understand them, too.

"Where an appliance is distributed promiscuously in any territory, where there is an overlapping of distributors and dealers, there is a nice volume of business—for a while. Sales soar and then comes

(Continued on page 59)

Thad Heermans, of F & H Electric Motor Service, Dallas, demonstrates the use of his stator winding tamping tool. The tool is shown in more detail below.

Dallas Motor Service Expert Develops Time-Saving Tools

IN MORE than 20 years of repairing and re-winding motors, Thad Heermans, partner in the F & H Electric Motor Service, Dallas, Texas, became more or less fed up with the tedium and inaccuracy involved in some long-accepted shop procedures.

As a result, Heermans has invented a number of timesavers for shop work. The majority of these are used exclusively by Heermans and his partner, Edgar Foote, but one has been manufactured in a very limited quantity, and is in use in several Dallas shops. It will be made available to the trade whenever Heermans gets material and time to fill orders. This is a set of tamping pliers for tamping the coils down in a motor. They are fully protected by patent application.

The old method involved use of a tamping tool and hammer and the new tool results from the fact that Heermans "got tired of fighting these jobs" and decided that something could be done about it. It was especially difficult to use the old method on a small motor and it is for such tasks that the pliers are specially useful, although they are just as effective on larger motors.

Operation of these pliers is contrary to the conventional, since squeezing pressure on the handles results in expansion at the head. The plier head is slipped into a slot of the stator and squeezed, whereupon the plier head engages the bars of adjoining slots and a plunger is depressed, thereby tamping the winding. The plier head is easily slipped along the slot with successive depressions of the plunger which accomplishes the tamping operation in a minimum of time.

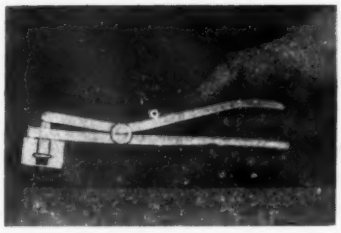
One Heermans invention which saves considerable shop time in close-quarter working conditions on motors is his polarity indicator.

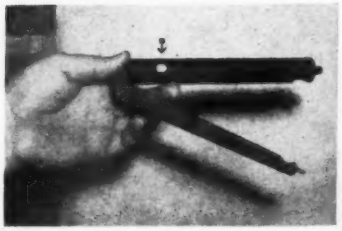
This is made from a section of brass plate with a cut-out portion to accommodate a two-pole needle, one end of which is magnetized. The needle revolves freely on its axis. This gadget is inserted into the stator section of the motor and as polarity is indicated, necessary markings are made with chalk, for which a container is mounted on the head of the implement. Heermans created this timesaver because he was tired of using a compass to determine polarity. It was necessary to remove the compass, then make polarity markings. Heermans does it in one swift operation.

A third Heermans invention is a fuse tester constructed of bakelite tubing and a strip of bakelite. These are hinged in the manner of dividers, permitting easy adjustments to two points of contact. The great advantage of the fuse tester, according to Heermans, is that the tubing section contains a flash light bulb, instead of the conventional neon tube.

"The conventional tester with its neon tube often fools you," says Heermans, "because, with the ordinary tester, you often get a light even when fuses are out if there has been carbonization. I have wasted many hours, trying to locate trouble, when the conventional fuse tester misled me. But with my tester and its flash light bulb, there must be current flowing for me to get a light. It is a positive test."

Heermans also uses a miniature rotor in shop testing for motor direction. This, he says, does away with all uncertainty about motor direction and avoids the necessity of doing work over in case of error in determining motor direction.





Three of the time-saving devices: top, tamping tool; center, polarity indicator; bottom, fuse tester.

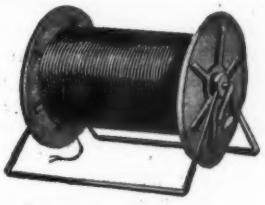
We knew that Laytex-insulated wire was good. But actually, *no one* expected any single wire to stand up to all the tough war-usage that Laytex did.

Laytex has taken arctic cold, tropic heat, moisture, mold, shock and wear, as no other wire has ever done heretofore. It has been used for virtually every purpose a wire can be used for—action-tested all over the world—and has come out with flying colors.

Laytex has a proven record of delivering *more* electricity, *more* dependably, in *more* jobs than any other wire we know.

Right now the entire output of Laytex Wires and Cables is going to the Armed Forces. But the day is steadily drawing nearer when manufacture will be resumed for Buildings, Police and Fire Alarms, Communications, Signalling, Power, Control, and other exacting services.

RUBBER INSULATION AT ITS BEST



U.S. Laytex

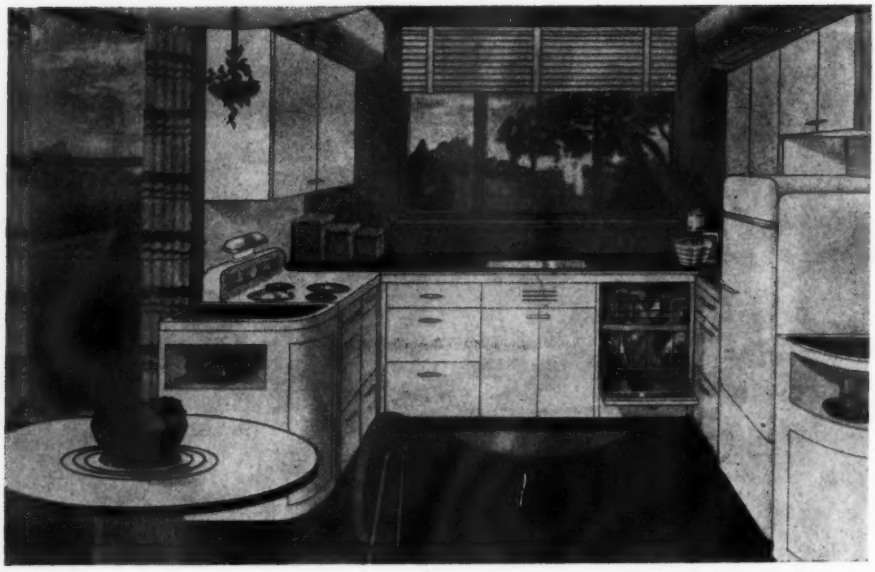
Reg. U. S. Trade Mark

WIRES AND CABLES

SERVING THROUGH SCIENCE TO PIONEER A NEW ELECTRICAL ERA

UNITED STATES RUBBER COMPANY

1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, N. Y.



Manufacturers will assist dealers in the installation of complete "package" displays of kitchen equipment in the leading stores across the nation because these stores will become experts in the sale and installation of appliances in complete room groups.

Package Kitchen Promotion

DESPITE widespread publicity for designers' dream supermodern electric kitchens in which 40-second meals are cooked by electronics, American homemakers will want a kitchen reflecting "evolutionary" changes — equipment that is "conventional"—not a complete break with the past. For example: they do not want an electric range with the oven separated from the surface burners for use in different parts of the kitchen, as suggested by one designer. "Comfort, flexibility, time-saving" sum up favored design among home economics directors to whom Hotpoint recently sent an "opinion" questionnaire, according to H. D. Conklin, manager, range and water heater sales division, Edison General Electric Appliance Company. He said:

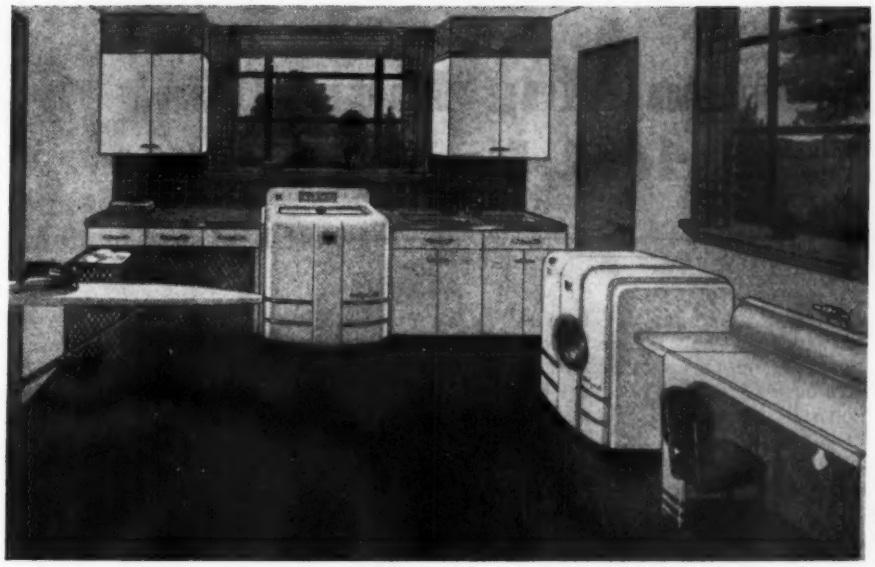
"A design that is conventional to many designers is very often 'revolutionary' to homemakers. The new electric ranges, while representing the results of many years of refinements and advances, will not differ greatly from those sold in 1941 when war production replaced range manufacture." He added that the electric range industry sold more than a million units in the two years preceding the war, which represented a "user" increase of 50 per cent over all previous electric range sales made over a 30-year period. "In 1941, the last year for which we have complete figures, more than 760,000 electric ranges were sold." Linking the opinions of home economists on design with the prewar sales figures, Mr. Conklin predicted:

No Radical Changes

"The electric range will take up in postwar where it left off, with models which will bring new ease, comfort, and beauty to homes; they will become standard equipment in new homes and remodeled homes as part of the all-electric kitchen, and sales shall continue at a rate during the next ten years which will make electric cooking as universal as electric lighting is today."

Single unit sales of ranges and refrigerators will outsell "complete package" kitchens immediately after the war, but complete kitchens of matched "branded" appliances, from steel cabinets and electric sinks to dishwashers and garbage disposalls, will be on display at department, furniture, hardware, and specialty appliance stores, he said, adding, "any question concerning the profit possibilities of electric appliances in department and furniture stores will quickly vanish when these appliances are shown in demonstration rooms which permit the prospect to operate the appliance. Thousands of women will order 'installations', similar to those displayed in showrooms, others will ask for single appliances. The single appliance sales will become part of a 'complete kitchen,' purchased and installed by units. The time will soon come when merchants will sell most appliances as parts of a 'complete package.'" The beauty and utility of electric kitchens is even now generally recognized by the consumer, and the demand has waited many years for the same recognition from appliance merchandisers.

During the years following the introduction of the first "package" kitchen in 1932, utilities and a few department and furniture stores used these "room displays" principally to promote the sale of individual appliances. Interest was great in complete kitchen installations, but few companies were ready to organize departments for their installations and financing.



Laundry equipment also lends itself to "package" displays. Here's a laundry center that will fulfill any housewife's dream: s o r t i n g and sprinkling table right next to automatic washer, portable clothes baskets, deep bowl sinks, electric dryer, and cabinet type ironer.

in Postwar Selling Plans

Now we are ready to show merchants that there is a market for complete kitchens if they are ready to take advantage of it. Postwar will see thousands of appliance dealers showing these complete electric kitchens with prices plainly marked for installation, including floor covering and other equipment necessary to make a comfortable woman's workroom.

In explaining the sharp increase in sales of electric ranges immediately prior to the war, Mr. Conklin cited the following table of electric rate history for 10 years: (see table below.)

"An important point about this rate change is: there is no other electric appliance that has the greatly increased market potential that awaits the sale of the electric range," he said. "Much has been made of certain glamor appliances, such as television, but the electric range, already a favorite in millions of homes because of past performance, will spearhead appliance sales which include all of the equipment for electric kitchens. While one of the considerations for installing 'package' kitchen displays will be as a showpiece for individual range and refrigerator sales, these sales will in turn lead to complete kitchen sales for dealers who are prepared to handle them. We must all bear in mind that the dealer who talks and shows complete kitchens, with the electric range as his center of interest, will build a sound and profitable business for the years that follow any immediate sales boom that may follow the war;

H. D. Conklin

and, at the same time, he will become a leader in the sale of ranges, refrigerators, and other individual items.

"Past sales history shows that centrally located outlets for appliances such as department, furniture, and hardware stores, have made profit from the sale of appliances in proportion to the advertising and sales effort put into them," Mr. Conklin said, adding. "The greatly increased display possibilities of all-electric units

(*Continued on page 58*)

Year	Domestic Meters	Meters With Rate Available*	% to Total
1931	20,150,347	8,000,000	39%
1934	20,135,309	11,000,000	55%
1936	21,310,197	14,275,000	67%
1938	22,709,487	18,200,000	90%
1941	25,474,412	24,200,000	95%

*A cooking rate of three cents or less per KWH is considered favorable. The national average for domestic meters is 2.2 per KWH.

Maintaining Industrial Electrical Equipment

Part 1 – Disassembling and Testing Motors*

CHECK AIR gap for bearing information before taking down the motor or generator. It will be useful after bearings and journals have been reassembled. Bearings that contain oil should be drained at the start to avoid spillage and waste. It is preferable to move a motor to the shop for overhauling, where the parts can be kept clean and in good order. Coupling-halves, pulleys, pinions, and fans should be removed by a puller. Severe hammering or wedging is likely to injure other parts, as well as those being removed.

Clean each part immediately; put them all in a clean place under paper or cloth cover.

If it is necessary to remove a ball bearing, use a puller, maintaining a uniform pull all around so as not to distort the bore of the race, and to avoid shaving the shaft.

Rotors or armatures may be lifted slightly by rope slings when moving out of stator. Dragging over punchings should be avoided.

Smaller parts that are disconnected, such as field connections, yokes, brush holders, collector rings and the like, should be cleaned, tagged, and put aside in order, where they will not get mixed up with similar parts from other units. Field coils, armatures, and wound rotors should be carefully handled and placed in a suitable support to avoid bruising or cracking the exposed insulation. Rehandle as little as possible.

When the motor is being reassembled, parts should not be forced together; it is better to find the trouble and bring things into position without marring or distortion. Start with parts clean, and keep them so during assembly operations.

Check air gap again, and compare with previous check. Line up motor carefully when it is put back into service. If a coupling is used, check to make sure the faces are parallel, and that the shafts are in line before setting up the coupling. A flexible coupling calls for equally good alignment.

Make sure that fans have been replaced, and that lubrication has been provided.

Restore all enclosing features and replace broken or missing fastenings. Explosion-proof motors call for great caution in maintaining exact fit at all joints.

Reconnect ground wire. Check connections with diagram, especially on two-voltage motors. Turn motor by hand, or if connected to a machine, use a lever if possible. note any binding, noises, or uneven torque and make corrections if needed. Apply voltage, and operate motor unloaded for a little while, noting ventilation, lubrication, speed, and noises.

Remove all dirt and rubbish around the machine.

Make a special inspection within a few days after putting motor into service; regular inspection time may be far off.

Insulation Tests

Megohms (million ohms) of resistance between a winding and ground is a good indicator of insulation condition. Comparison with several previous readings will give an indication of improvement or deterioration. Readings should be taken with the machine at normal working temperature. Readings, to have comparison value, should be taken under the same conditions.

Two methods of obtaining resistance readings are commonly used:

1. A megohmmeter (not a magneto) is a self-contained instrument which gives a direct reading of insulation resistance. Follow instructions furnished with instrument. Although cranked by hand, the megohmmeter provides constant voltage while the clutch is slipping, and the index should read "infinity." When connected across the resistance to be measured and cranked beyond the slipping speed, the resistance is indicated directly.

2. The voltmeter method requires a voltmeter having a resistance of about 100 ohms per volt. A 500-volt instrument is preferred. Disconnect all leads of the motor from the line. In case of heavy loads, line power can be broken at the circuit breakers or disconnecting switches, if proper precautions are taken to prevent power from being turned on accidentally while work is being done on the machine. Read line voltage which will be E in the formula. Now connect the ungrounded d-c line through the voltmeter to a motor lead, and the other d-c line through a 10-amp fuse to the motor frame. Meter reading is E_1. With r representing meter resistance, and R the insulation resistance in megohms:

$$R = r \times \frac{(E - E_1)}{E_1}$$

Either the megohmmeter or the voltmeter method may be applied to any high resistance, such as the insulation of a group of coils, as well as to that of a whole machine.

AIEE Standards establish the following "Normal Insulation Resistance Value":

$$\text{Megohms} = \frac{\text{Rated voltage of machine}}{\frac{\text{Rating in kva}}{100} + 1000}$$

This will work out to about:
220-volt motor—0.2 megohm
440-volt motor—0.4 megohm
550-volt motor—0.5 megohm

Tests to Locate Defects

Direct-current and alternating-current windings may be tested for grounds, short circuits, and high-resistance joints; also wrong connections, wrong polarity, etc.

If a low-resistance ground in

*This article is adapted from information prepared by engineers of the General Electric Company.

SHE'LL READ IT TONIGHT.. AND THANK YOU FOR YEARS!

New, 104-page Year 'Round Meal Planning Guide... is sure-fire way to win friends and influence customers

Forget you... how could she! What with your name big as life on the back cover of this book she'll use daily!

Building good will is the smartest trick you can stage, these days. And this marvelous new book will do it for you. How?

First, it takes the grief out of meal planning . . . and show us the woman who won't welcome that one!

Second, it gives her plenty of practical low-down on getting full value for her food dollars... another tender spot in a woman's heart.

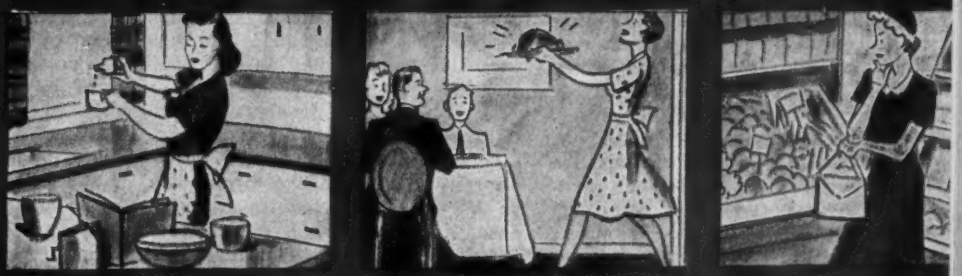
Third, it shows her how to be an even better cook . . . and most women are pretty vain about their cooking ability.

Fourth, but why go on . . .

How many Year 'Round Guides do you need to do a real job winning future customers for you? Price only 10 cents each; imprinting to be done by your local printer. Immediate delivery. Order direct from your Westinghouse distributor, today!

Distribute Guides where they'll do you the most good

3 times a day, every day, she'll use it



Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

ELECTRIC HOME APPLIANCES

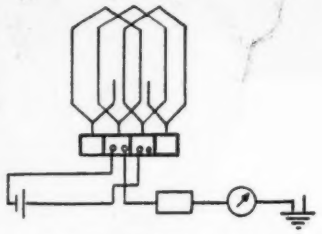


Fig. 1. Connection hook-up which can be used to test for grounds. A low-voltage current, which is sufficient to give a readable deflection on a galvanometer or millivoltmeter, is passed through the armature windings from one commutator bar to the next.

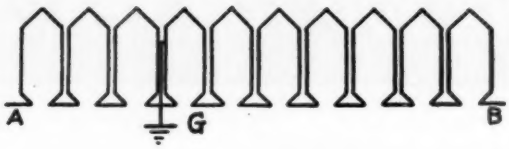


Fig. 2. An example of a connection hook-up for testing an alternating-current winding with 10 coils in series.

armatures with commutators has been developed, it may quickly and accurately be located by the following method: a low-voltage current, which is sufficient to give a readable deflection on a galvanometer or millivoltmeter, is passed through the armature windings from one commutator bar to the next, as shown in Fig. 1. A line is connected from the galvanometer to the ground, and the other galvanometer connection is placed on one of the commutator bars. The supply and galvanometer leads are then passed from segment to segment. When a full deflection is obtained, the coil is grounded.

Tests for Grounds

Measuring the ohmic resistance of the winding will sometimes reveal a wrong connection, which, on a bar-to-bar measurement, would give a uniform deflection all around the commutator. Series or wave windings may sometimes have all conductors joined in series, but in the wrong order, making the armature inoperative. In case of multiple or lap windings —double-, triple-, or even quadruple-spiral re-entrant windings are possible, whereas a single spiral is required. In taking a resistance measurement of the armature, see that the measurement is made from the proper commutator segments.

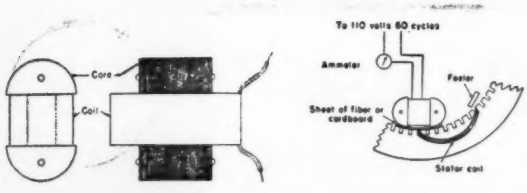
Special clips are attached to the commutator bars, and spaced the number of bars apart equal to the total number of bars divided by the number of poles. Each alternate clip is connected in parallel to one terminal of a double bridge, and the remaining clips are connected in parallel and to the other terminal of the double bridge. The resistance reading then obtained is the true running resistance.

Alternating-current windings are similarly tested for grounds, short circuits, open circuits, wrong connections, polarity, etc. In testing for grounds, the methods and apparatus used are similar to those used for direct-current machines, except that with alternating current, the voltage generated is usually higher. Consequently, the testing voltages are correspondingly higher, and greater care must be taken in testing. Place the testing equipment as near to the apparatus as possible, as the additional capacitance of the testing may raise the voltage at the receiving end much higher than that at the operating end. Unless this precaution is taken, excessive voltage may be applied, and this may damage the insulation. If a ground develops, a resistance measurement will generally locate the point at which it occurs, unless each phase has two or more multiple circuits. In this case, it may be more readily located by opening one or more of the end-connection joints, and separating the circuits.

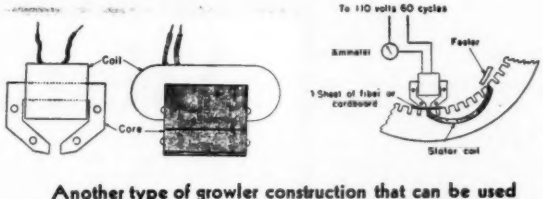
A measurement may be taken as shown in Fig. 2, which represents a single circuit or phase of an alternating-current machine, with the ground as shown. If the resistance between A and B is one ohm, between A and G is 0.35 ohm, and between B and G is 0.65 ohm, the location of the ground is 0.35 of the distance between A and B, from A. Since ten coils are in the circuit, the measurements show that the fourth coil is grounded, counting from A.

In the case of an alternating-current winding, the ohmic-resistance measurement will not always detect a wrong connection, such as a reversed coil, pole section, or phase; for, although the copper resistance would be measured correctly, the total winding might be partly reversed, and therefore, inoperative. Such faults can be discovered by a polarity or impedance test with alternating current. For this purpose, a single-phase current can be used, since a reading may be taken on the different circuits or between pairs of terminals successively, by shifting the testing lines until all windings have been tested.

Short-circuited coils on moderate-size machines can readily be tested by using a wound electromagnetic yoke, or "growler," excited with alternating current. This yoke is placed over a portion of the winding with the coils in their slots. The yoke and windings form an alternating-current transformer, with a yoke winding as primary, and the winding coil as



One type of growler that can be made for testing motors for short circuits in the stator winding, and how to use it.



Another type of growler construction that can be used for testing for short circuits in stator windings, and method of using it.

secondary. If there is a short-circuited turn, layer, or coil in the motor, the magnetizing current in the yoke winding will rise. If the current is maintained for a short time, the insulation on the short-circuited section will warm up appreciably, or burn sufficiently to indicate the defective coil.

On alternator windings, tests can be made for short circuits by passing alternating current through the armature coil itself. In this case, it is usually necessary to increase the reactance of the coil by placing a magnetic bridge over its coil slots, after it has been assembled in the core.

Checking Polarity

To test for the opposite polarity of alternating poles, bridge two pole tips with a piece of soft iron. If the polarities of the poles differ, the piece will be strongly attracted, whereas, if the poles are of the same polarity, there will be no attraction. Polarity can be tested by use of a compass, but the compass must not be carried too near the poles, as it may be demagnetized, or even reversed.

With a given current flowing through the field, the voltage drop on any one coil of a direct-current machine should never be more than 5 per cent higher or lower than the average drop, except single-turn series coils, which may have a variation of 10 per cent. In alternating-current machines, no coil should vary more than 5 per cent either way from the average. If the drop is outside these limits, the matter should be referred to the office for instructions. After assembly on the spider, field coils for alternating-current apparatus are tested in the same manner as prescribed for direct-current machines. In addition, the coils are checked for impedance by applying a high-frequency voltage to each coil, and measuring the current flow. The current will increase considerably, if there are any short-circuited turns. In recording drop on the coils in alternating-current machines, number them in a clockwise direction, facing the collector end, and beginning at the coil next to the opening in the field, for coil No. 1.

In direct-current machines, for record purposes, coil No. 1, either main or commutating, is the top coil or the next adjacent in the clockwise direction facing the commutator end.

When testing a machine, a very careful record must be kept of the resistances of all the windings. For measuring the shunt-, commutating-, and series-field resistances, the voltage-drop method may be used.

Electronics Speeds Plastics

A big speed-up in the plastics industry — surpassing anything achieved in the past quarter century—is achieved by electronic power heating. For instance, it formerly took two hours to mold a 4-pound test block 6 inches square by 2⅜ inches thick. With electronic power heating, it takes five minutes.

Electricity Changes Wash-Day Traditions

Another American tradition is passing.

The usual farm schedule, "Monday washday and Tuesday ironing," soon may be abolished for the most part, the National Adequate Wiring Bureau says.

The two days will be telescoped into a brief three hours—something like between breakfast and lunch on Monday, the bureau believes. An electric combination—washer, wringer, drying cabinet and ironer—does the trick and cuts a full 1½ days from the homemaker's labors.

The AIEE Standards, No. 1, recommend that hottest-spot temperatures should be limited as follows:

Classification	Limit	Assumed equal		Observable reading
		Thermometer 90 C	Resistance Method 95 C	Embedded detector method 100 C
Class A insulation (cotton, silk, paper, impregnated enamel)	105 C			
Class B insulation (inorganic materials such as mica or asbestos with binding substances)	125 C	110 C	115 C	120 C

Above based on assumption of room temperature of 40 C.

Wartime Recommendations

This table shows how the permissible loading can be changed when different ambient temperatures and hours of use are encountered. *The basic WPB recommendations of wartime loading for the usual set of conditions are shown in italic type for the three common types of enclosures.*

(Standard 60-cycle polyphase induction motors with speeds of 450 to 3600 rpm, hp ratings of 1 to 200 hp, and Class A insulation)

Max. allowable occasional surrounding* temp C when motor is fully loaded during the following number of hours per day			Permissible load in per cent of motor-nameplate rating	Approx motor-temp rise (C) by thermometer	Allowable momentary peak load in per cent of permissible load (Assuming 10 per cent voltage reduction)
24 hr	8 hr	2 hr			
Open motors, rated 40 C					
30	40	60	130	70	120
40	*50*	*60*	*125*	*60*	*128*
50	60	70	115	50	140
60	70	75	100	40	160
70	75	90	80	30	200
Splashproof motors, 40 C					
30	40	50	120	70	132
40	*50*	*60*	*110*	*60*	*144*
50	60	70	100	50	160
60	70	75	85	40	180
70	75	80	70	30	220
Totally enclosed; and totally enclosed, fan-cooled motors, 55 C					
30	40	50	120	75	132
40	*50*	*60*	*110*	*65*	*144*
50	60	70	100	55	160
60	70	75	85	45	188
70	75	80	70	35	220

* The usual surrounding temperature should be 5 to 10 C lower than the *maximum* allowable occasional surrounding temperatures listed here.

NOTES: The average motor winding should last perhaps 5 to 10 years under the above conditions—a reasonable life for wartime, according to WPB recommendations.

50-cycle motors will have the same permissible loading factors as 60-cycle motors with the same nameplate temperature rating.

Curves can be drawn for the interpolation of these data.

Household Appliance Condition Indicated by OCR Survey

THE OFFICE of Civilian Requirements, War Production Board, has prepared a review of repair status, age and quantity in domestic uses of 23 household appliances and items of equipment.

The material was recently compiled from findings of the Third Survey of Consumer Requirements, made during April for OCR by enumerators of the Bureau of the Census. Results are based on replies from about 4500 households, geographically and economically representative of the nation as a whole.

The 23 appliances and items of equipment covered by the survey are:

Electric toaster
Electric iron
Electric fan
Radio (excluding auto)
Vacuum cleaner
Sewing machine
Mechanical refrigerator
Washing machine
Cooking stove—gas
Cooking stove—electric
Cooking stove—oil
Cooking stove—wood
Heating stove—gas
Heating stove—electric
Heating stove—oil
Heating stove—wood
Water heater—gas
Water heater—electric
Water heater—oil
Water heater—wood
Hot air furnace
Hot water boiler
Oil burner

Radios stand out as the item most in need of repair, followed by oil cooking stoves, vacuum cleaners, washing machines, wood-burning cooking stoves, electric cooking stoves, electric irons, sewing machines, wood-burning heating stoves and oil burners.

Although more than half of the appliances are five or more years old, the percentage found to be in working order ranges from 85 per cent in the case of radios to 99 per cent in the case of several items of heating equipment.

Among radio-owning households, eight per cent have none in working order. Among households with gas or electric water heaters or hot air furnaces, only one per cent or fewer have none in order.

The extent of need for service and repairs found in the survey ranged from one per cent for electric water heaters to 28 per cent for radios. Seventy-nine per cent is the highest proportion of success

Condition of Household Appliances and Equipment

Appliance	Estimated Number in Households	Total 100%						Condition of all Appliances		Households with one or more appliances, but none in working order
		Less than 1 yr.	1 yr.	2 yr.	3 yr.	4 yr.	5 or more years	In Order %	Out of Order %	%
Electric toaster	22,151,756	0.5	3.1	11.7	14.1	12.8	57.8	93	7	6
Electric iron	32,939.352	0.3	2.4	10.1	13.3	11.7	62.2	94	6	4
Electric fan	13,929,452	0.5	2.0	9.5	13.5	12.0	62.5	93	7	6
Radio (excluding auto)	46,275,528	1.0	3.6	11.6	16.8	15.0	52.0	85	15	8
Vacuum cleaner	16,770,492	0.6	2.2	6.3	9.6	8.1	73.2	93	7	5
Sewing machine	23,664,192	0.6	1.1	3.0	3.1	3.1	89.1	95	5	4
Mech. refrigerator	21,132,324	0.3	1.8	6.6	14.1	13.8	63.4	98	2	2
Washing machine	18,625,524	0.2	2.0	6.7	10.2	8.8	72.1	95	5	4
cooking stove—gas	20,305,080	1.3	4.2	6.9	10.6	9.3	67.7	99	1	1
Cooking stove—electric	3,542,944	0.8	1.4	7.7	16.5	14.3	59.3	97	3	3
Cooking Stove—oil	6,216,864	2.4	4.8	8.6	14.4	11.0	58.8	94	6	5
Cooking stove—wood	11,715,112	1.9	3.6	5.9	7.8	6.2	74.6	96	4	4
Heating stove—gas	8,648,460	4.6	6.7	14.2	12.8	12.5	49.2	99	1	*
Heating stove—electric	11,186,552	1.6	4.0	9.5	12.7	12.7	59.5	97	3	3
Heating stove—oil	3,618,148	0.6	6.9	10.9	19.1	13.4	49.1	98	2	2
Heating stove—wood	13,102,208	4.1	9.2	11.7	8.4	9.1	57.5	96	4	3
Water heater—gas	9,492,416							99	1	1
Water heater—electric	1,203,264							99	1	*
Water heater—oil	890,092							98	2	2
Water heater—wood	2,431,596							97	3	2
Hot air furnace	7,161,092							99	1	*
Hot water boiler	3,417,604							99	1	1
Oil burner	1,570,928							95	5	2

*Less than five-tenths of one per cent.

Aluminum cuts costs by taking the *Grunt* out of labor

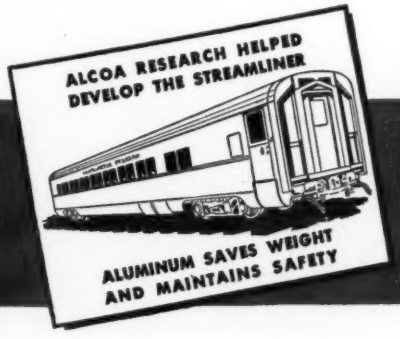
Weight-saving aluminum reduces the labor that has to be expended to do a job. Equipment manufacturers and employers are finding it increasingly important to bear this fact in mind.

The lighter weight of Aluminum Cable Steel Reinforced means that full reels weigh less. Handling from storeroom to the job is easier. With A.C.S.R., there's less weight to be maneuvered into place on poles and towers, so that work goes faster. Lines cost less.

The lighter weight of aluminum bus bars, housings, conduit, Alzak* Aluminum light reflectors, offers identical advantages; easier delivery to the job, faster erection, and lower costs all along the line. Doubtless, many electrical devices could similarly be made labor savers by cutting their weight.

Winning the war comes first, but aluminum is now being used for other-than-war purposes as the manpower situation permits. Our representative will be glad to discuss the availability of aluminum with you. ALUMINUM COMPANY OF AMERICA, 2164 Gulf Building, Pittsburgh 19, Pa.

*Registered trade mark



ALCOA A·C·S·R

ALCOA ALUMINUM

WESTINGHOUSE PRESENTS JOHN CHARLES THOMAS • SUNDAY 2:30 EWT., N.B.C. •
"TOP OF THE EVENING" • MON., WED., FRI., 10:15 EWT., BLUE NETWORK

Phosphor powder particles, like human beings, are of infinite variety. Some are fat, some lean. Some are dull . . . and some are *bright!*

Determining the *size* of particle that has the most sparkle has proved one of the most exciting of Westinghouse research problems.

Out of thousands of batches tested, one size has consistently shown the highest degree of fluorescence. This discovery has resulted in the development of phosphor powders with the greatest life and sparkle.

These powders are now used in all Westinghouse fluorescent lamps. That's why the Westinghouse Mazda fluorescent lamp of today delivers bright, high efficiency light wherever it is installed. And that's why it pays to recommend Westinghouse!

While much of our fluorescent production is earmarked for war industry, we are continuing as far as possible to supply fluorescent lamps for essential civilian use. Westinghouse Electric & Manufacturing Co., Bloomfield, New Jersey.

HELP SHORTEN THE WAR . . . BUY MORE BONDS THAN BEFORE!

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

MAZDA LAMPS FOR SEE-ABILITY

in obtaining repairs (for vacuum cleaners); 30 per cent (for gas water heaters) is the lowest. For most items surveyed, the proportion recently in need of repair is less than 10 per cent. The average of the percentage of success in obtaining repairs, for all items, is 61 per cent.

Almost 90 per cent of domestic sewing machines are shown to be five years old or older, an age record not approached by any other item. Wood-burning cooking stoves are next, and vacuum cleaners, of which 73 per cent are five years old or older, take third place on the age list, followed closely by washing machines. Over 60 per cent of the following items have been in service for five or more years: Electric irons, electric fans, mechanical refrigerators, gas and wood cooking stoves.

In estimated number in households, radios lead the list of items, with more than 46,000,000 in homes of the country. Owners report that 85 per cent of these radios are in working order, but 28 per cent of the households with radios state they have needed some sort of repair since January 1. More than half reported they had no difficulty in obtaining repairs. Only eight per cent of households owning one or more radios say they have none in working order. Over 50 per cent of the domestic radios in current use are five or more years old.

Of the more than 23,000,000 sewing machines in American households, all except five per cent are in working order, although 89 per cent are five or more years old. Ten per cent of domestic sewing machine owners have attempted to obtain repairs this year, three-fourths being successful.

More than half of the 22,000,000 electric toasters in American homes are five or more years old, but only nine per cent of owners report that they have needed toaster repairs this year. Of those seeking repairs, 70 per cent were successful.

Almost 17,000,000 vacuum cleaners are in households, 93 per cent of these cleaners are in working order, 73 per cent are five or more years old. Sixteen per cent of vacuum cleaner owners needed repairs for their appliances this year. More than three-fourths encounterd no difficulty.

Ninty-three per cent of the almost 14,000,000 electric fans in private homes are in working order. Three-fourths of those needing electric fan repair this year have been able to obtain it without difficulty. Of the fans in use, 62 per cent are five years or more old.

Of the heavier household appliances, mechanical refrigerators stand first in estimated number in American households—about 21,000,000. Owners report that 98 per cent of these items are in working order, that repairs were required during the first three months of this year for nine per cent, that slightly more than half of the repair demand was met. The period covered by the survey was the least active season for refrigerator repair. Sixty-three per cent of domestic mechanical refrigerators are five years old or older.

Eighteen and a half million washing machines are estimated to be in households. Ninety-five per cent of these washers are in working order, although 72 per cent of them are five or more years old. Of the 16 per cent of owners who have tried to obtain washing machine repairs since January 1, more than two-thirds have been successful.

Of the 20,000,000 gas cooking stoves in households, 99 yer cent are in working order, but seven per cent of them needed some repair this year. Fewer than half of those seeking repairs for this item reported success. Sixty-seven per cent of all gas stoves in domestic use are at least five years old.

Cooking stoves other than gas—electric, oil, wood—total about 21,000,000 in household use and, by type, from 94 to 97 per cent are in working order. About 15 per cent of owners sought repairs during the first three months of 1944, with about 70 per cent succeeding in getting repairs. Fifty-nine per cent of the electric and oil stoves are five or more years old; 74 per cent of the wood-burning stoves are in that age group.

Of the approximately 36,000,000 heating stoves — gas, electric, oil and wood — used in American homes, the proportion in working order is over 95 per cent for each type. From 49 to 59 per cent, depending on the type, are five or more years old.

Water heaters of all types—gas, electric, oil and wood — of which about 14,000,000 are in households, are shown to have an excellent "in order" record, no type falling below 97 per cent. No age figures are available for domestic water heaters.

OPA Clarifies Price Control On Construction Services

THE PRICE regulations governing construction services and installed building materials have been explained in a recent issue of OPA Trade Bulletin. These bulletins are written to help the trade understand and follow new, amended, or revised price regulations. They cover only the main points of the regulations and do not take their place. If the following bulletin does not answer all questions concerning this regulation, the contractor should write his OPA District Office for further information and for a copy of "Revised Maximum Price Regulation No. 251, Effective August 26, 1944."

Following is the text of OPA's explanatory bulletin on this price regulation:

What Is Covered

(1) All building and construction contracting. This includes: installation of building materials, that is, anything incorporated into or made a part of a building or construction project. (The regulation covers sales of building materials on an installed basis, as well as sales of installation services alone.).

(2) Other construction services, such as maintenance, repair or remodeling of a building, structure, or construction project, excavation, demolition and site clearance, water-well drilling and landscaping.

Who Is Covered

All contractors, subcontractors, and other persons who supply these construction services either with or without the building marials installed, whether on a cost-plus, lump-sum, or unit-price basis. This includes all building trades like bricklaying, plumbing, painting, etc., and other construc-

In a single month . . . more than 1000 applications for the Frigidaire Franchise!

WE deeply appreciate the many thousands of requests being received for the Frigidaire Franchise. Our only regret is that we are able to grant franchises to so few of the many fine established dealers and other businessmen who have applied—the kind of people with whom we would be proud to be associated.

However, the very reason why we are able to accept such a small number of these applications is one of the most important reasons why a Frigidaire Franchise is so desirable. For Frigidaire believes that the soundest policy is to have in each market or community the right number of quality dealers to obtain Frigidaire's proper share of available volume—and at the same time provide a profitable potential for each Frigidaire dealer.

There are many other factors that make the Frigidaire Franchise so desirable. To name only a few—

1 The value of the Frigidaire name and the reputation of Frigidaire products mean easier selling.

2 The more than *seven million* Frigidaires built and sold provide Frigidaire Dealers with an unequalled backlog of goodwill and user-to-prospect selling help. (Surveys show advice of friends and relatives to be the most valuable single source of sales.)

3 The service record of the Frigidaire organization is outstanding in its field: Frigidaire's wartime service program has built boundless goodwill.

4 Frigidaire's wartime advertising program has made partners of Frigidaire Dealers in providing users of all makes of refrigerators with helpful information. Customer goodwill has been heightened, acceptance for Frigidaire maintained and strengthened—providing an even greater competitive advantage for Frigidaire Dealers.

5 The Frigidaire business is the primary interest of all Frigidaire Distributing Organizations; thus they are in a position to give really effective aid in meeting sales problems.

6 Frigidaire has established an enviable record for giving Frigidaire Dealers sales-getting merchandising and selling programs.

7 Frigidaire Customer and Product Research guarantees that Frigidaire products will be more salable, because they will continue to incorporate "*more* of what people want and *less* of what they don't want."

8 Frigidaire Sales Training programs now in preparation assure that when "selling times" return, Frigidaire Dealers and their salesmen will be in a position to make the most of them.

9 Frigidaire is noted for the quality and the quantity of help provided dealers on all phases of their Frigidaire business.

10 Throughout the years, Frigidaire has demonstrated its willingness and ability to meet changing conditions—to handle new situations quickly and effectively as they arise.

The importance of all these factors has been demonstrated through years of experience. Their soundness is proved by the fact that the dealer organization built upon them has long been the strongest in the industry!

Listen to the
GENERAL MOTORS SYMPHONY OF THE AIR
Every Sunday Afternoon, NBC Network

BUY AND KEEP MORE WAR BONDS

For Excellence in War Production

FRIGIDAIRE
Division of
GENERAL MOTORS

DAYTON 1, OHIO • LEASIDE 12, ONTARIO

Pioneering builders of
ELECTRIC REFRIGERATORS • RANGES • WATER HEATERS
HOME FREEZERS • ICE CREAM CABINETS
COMMERCIAL REFRIGERATION • AIR CONDITIONERS
BEVERAGE, MILK AND WATER COOLERS

tion trades, such as road building, bridge construction, steel erection, etc.

How to Figure Your Ceiling Price

Your ceiling price depends on whether you sell on a unit-price, cost-plus or lump-sum basis.

Unit-Price Jobs

Unit-price jobs means jobs on a per-hour, per-foot, per-square, or other time or measurement basis.

Your ceiling price is the highest unit rate you charged a purchaser of the same class for the same kind of job during March, 1942. If you used another price-figuring method at that time, you may use the same method in determining your unit rate now.

If the cost of materials has gone up since March, 1942, you may add an amount to cover that increase up to the ceiling prices.

You may also add increases in labor costs up to and including October 3, 1942. You may include here increases in Federal old age benefits, unemployment compensation taxes, and workmen's compensation and public liability insurance.

If you did not do the same kind of work during March, 1942, you must file with your OPA District Office an application for approval of a ceiling price. You must put in your application:

(1) Your name and address;
(2) The kinds of work to be done;
(3) The area where the work is to be done;
(4) Why you do not have a March, 1942, price or pricing method;
(5) Your proposed ceiling price;
(6) How you figured this price: Show your costs and margin, including profit. If wage rates for the particular class of mechanics or laborers have gone up since October 3, 1942, show the October 3, 1942, rate, the increases since that time, and whether these increases have been authorized or approved by the Wage Adjustment Board, National War Labor Board, or Economic Stabilization Director;
(7) The names and addresses of representative competitors of yours in the same area, and their ceiling prices for the same or similar jobs (if these ceiling prices are readily available to you).

You cannot charge the price you proposed until you get the approval by way of a letter-order by the OPA District Director.

Cost-Plus Jobs

Use the following formula:
(1) Materials and installed equipment, if any, plus
(2) Labor at rates paid on October 3, 1942; plus
(3) Other direct costs, including subcontracts; plus
(4) Margin on comparable jobs, as explained below.
The result is your ceiling price.
Figure the formula like this:
(1) Materials and Installed Equipment, if any:
Charge what you actually paid, but never more than the ceiling prices fixed for your supplier by whatever OPA regulation covers the materials. If you yourself manufacture the materials you install, you must not charge more than the ceiling prices fixed for selling them to other persons.
(2) Labor:
You must figure labor costs at wage rates not higher than those paid on October 3, 1942, in the area where the work is done.
(3) Other Direct Costs, Including Subcontracts:
You may charge other direct costs of the job, including the cost of subcontracts, but not selling expenses. If you use your own equipment, you may charge the rental rate allowed by the OPA regulation governing equipment rentals.
(4) Margin:
Your margin includes administrative and overhead costs, selling expenses, and profit. You must not charge more than the highest estimated percentage margin you charged on comparable contracts between January 1, 1939, and March 31, 1942. If you made no comparable contracts during that time, you must not charge more than you would have charged on a comparable contract in March, 1942, according to your experience or that of the industry.

Lump-Sum Jobs

Use the following formula:
(1) Estimate of materials and installed equipment, if any; plus
(2) Estimate of labor costs at rates paid on October 3, 1942; plus
(3) Estimate of other direct costs, including subcontracts; plus
(4) Estimated reserve for contingencies; plus
(5) Margin on comparable jobs.
The result is your ceiling price.
Figure your estimates of materials, labor and other direct costs, and your overhead and profit margin in the same way as for a cost-plus job. In your estimated reserve for contingencies you may include those that you can in good faith reasonably foresee.

Wage Increases Since Oct. 3, 1942

If you pay higher wages than on October 3, 1942, and the increase has been authorized or approved by the Secretary of Labor under the Davis-Bacon Act, Wage Adjustment Board, National War Labor Board, or Economic Stabilization Director for the area where the work is done, you may add the increased labor cost after you figure your margin. No application to OPA is necessary in order to make such an adjustment in your price. If none of these agencies authorized or approved your wage increases and OPA has not granted price adjustments for wage increases for your area for the particular trade, you must have OPA approval to add them to your ceiling price. You may file an application for approval with your OPA District Office, giving the full facts.

What You Must Not Do

(1) You must not sell or offer construction services or installed building materials for more than ceiling prices.
(2) You must not ask your customer to furnish materials for processing if it was your practice to furnish these materials yourself.
(3) You must not drop or reduce maintenance or repair services, customarily offered as part of a job.
(4) You must not lower the quality of materials and equipment below that called for in the specifications, or, if you do, you must reduce the price accordingly.
(5) You must not make the terms or conditions of sale harder on the customer than they were between January 1, 1939, and March 31, 1942. For example, you must not shorten the credit or cash-discount period, or charge more for giving credit, or give less cash discount. However, you may change the conditions of sale to meet the requirements of a government agency.

Before you make a contract or sale, you must tell your customer about Revised Maximum Price Regulation 251. He has a right to

(Continud on page 58)

Electrical Industry Pioneer Passes

Hotpoint executive was recognized as "father of the electric range."

GEORGE ALEXANDER HUGHES, 71, founder and chairman of Edison General Electric Appliance company, died September 9 in St. Lukes Hospital, Chicago. He was known in the electrical industry as "the father of the electric range," having organized the Hughes Electric Heater company in 1910 to manufacture the first commercially sold electric ranges. In 1918 he directed a merger which resulted in Edison General Electric Appliance company of which he continued as president.

George Hughes was born at Monticello, Iowa; April 14, 1873, the son of Alexander and Mary Hughes. As a baby he was taken to Dakota Territory where his father set up as an attorney at Elk Point. A year later the family moved to Yankton, where the father practiced law for nine years until 1881, when Dakota Territory was divided into states. Then Alexander Hughes took his family to Bismarck, the capital, where he became the first attorney general of the State of North Dakota.

George Hughes spent his boyhood in this frontier town, and when he finished at the local high school, went East to the University of Minnesota, at Minneapolis. George Hughes loved people and he sought action, so he became a reporter on the Bismarck Tribune. A year later he was city editor, and soon after that he was named North Dakota editorial representative for the "big-city" St. Paul Dispatch, moving to Fargo.

An uncertain electric company in Fargo was offering limited service at high rates to a few residents of the frontier community. George Hughes, newsgetter, knew that thousands wanted electricity. No dreamer, he spoke to his father, then went before the town council seeking a franchise to serve electricity to all homes. His petition was granted, and with his brother, Edmund, backed by his father and other citizens of modest means, George A. Hughes embarked upon an enterprise which was to lead him past many obstacles, through long years of struggles — often defeats—to place his name high among those of "modern pioneers."

The idea that electricity should be widely used and cheap was revolutionary—and popular. Soon the new compnay was operating plants in Bismarck and Dickinson, North Dakota; Glendive, Montana; and Eveleth, Minnesota. The business prospered, but George Hughes was not satisfied. He had heard of cooking by heated wires. If this were possible, it would mean vastly increased service—it would change the entire outlook on life for his pioneer neighbors on the treeless plains. He sold his utility interests and went to Chicago to gain aid for electric cooking.

The First Electric Range

On South Dearborn Street, Chicago, the newspaperman and organizer, rented a small loft and set an electrician to work in February, 1909, "converting" an oil cook stove to a "wire cooker." A year later the resulting device, laden with wires and coils, was shown to a group of pioneer electrical men at a St. Louis convention. This group, used to many startling offsprings of necessity, was frankly incredulous. However, one daring fellow bought the device, as well as four others which had been assembled, and sent them to his home community in Montana. Soon after, he ordered a carload, with the result that the first company to make and sell electric cooking equipment was organized, the Hughes Electric Heating Company, Superior Street, Chicago. The electric range industry was launched!

Slow, often painful progress greeted the early electric range, but six years later a factory site was procured at 5600 West Taylor Street, and a new, modern plant constructed. But the battle was not won, and Mr. Hughes continued his treks to remote parts of the country, personally pleading, explaining, and finally installing the first local electric range. As these sales multiplied, his factory grew, not easily, but surely and soundly, and thirty years later this plant was to make its millionth range; it was to blossom forth as the leader in a new mighty industry—a monument to American enterprise and zeal—built and directed by one who grouped around him an organization of men who did things for "the boss."

In January, 1918, Mr. Hughes engineered a merger by which he took in the Hotpoint Heating Appliance Company, and General Electric became owner of the new concern, adding its heating appliance

(Continued on page 62)

NEWS of the INDUSTRY
National and Southern

Nelson Eddy to Star In Utilities Show

The Electric Hour with Nelson Eddy — a half hour radio show sponsored by 170 Electric Light and Power Companies — had its premiere on Wednesday, September 20, at 7:30 P.M., P.W.T., over the entire Columbia Broadcasting System. This new show followed "Report to the Nation" which the companies sponsored for one year over CBS.

With the famous baritone star of the movies, concert stage and radio, is Robert Armbruster who conducts the 35-piece orchestra. Eddy and Armbruster are old friends. They've been on the air together many times and have made several record albums and individual records in combination.

Announcing the program and bringing listeners the Electric Companies' messages is Frank Graham, well known Hollywood announcer, and writing the scripts is Rupert Pray, who has written for Bing Crosby, Dinah Shore, and other radio personalities.

Charles Herbert, formerly on the production staff of CBS, directs the show. Herbert has produced such programs as "Col. Stoopnagle," "Here's to Romance," and other CBS features.

There's a note of informality on The Electric Hour. Not only does Eddy chat with Graham and the guests, but he introduces many of his numbers. Some of his songs are far departures from his usual repertoire. His guest policy is excitingly new.

On the first Electric Hour, Eddy introduced a young singer named Gloria Scott. Gloria, a mezzo-soprano with operatic ambitions, has been a Nelson Eddy fan for years and about six years ago managed to meet him at a concert he gave in Indianapolis. She told him then that someday she'd sing with him.

Gloria's letters to Eddy after this meeting were filled with her plans to become a great singer.

Nelson Eddy

He always took time to answer them and to encourage the youngster.

Finally, she sent him recordings made in New York and he was so impressed with her rich voice that he contacted the musical director of N. W. Ayer and Son, Inc., advertising agency, who gave Gloria an audition. Ayer became interested in the young singer and, upon Eddy's okay, asked her to make her network debut on the Electric Hour.

Southwest Power Pool Meeting Wartime Need

Operations and problems of the Southwest Power Pool which stretches through six states from Nebraska, through Kansas, Oklahoma, Arkansas, Louisiana and Mississippi, were explained by E. E. George, of Little Rock, Ark., at a meeting of the Oklahoma City section of the American Institute of Electrical Engineers, at Oklahome City, on September 14.

Mr. George is loaned by Ebasco Services, Inc., to the Southwest Power Pool as electrical engineer. He explained that this great interconnected system is carrying a load of 3,500,000 horsepower, 120,000 horsepower of which is serving the big aluminum plant near Hot Springs, Ark.

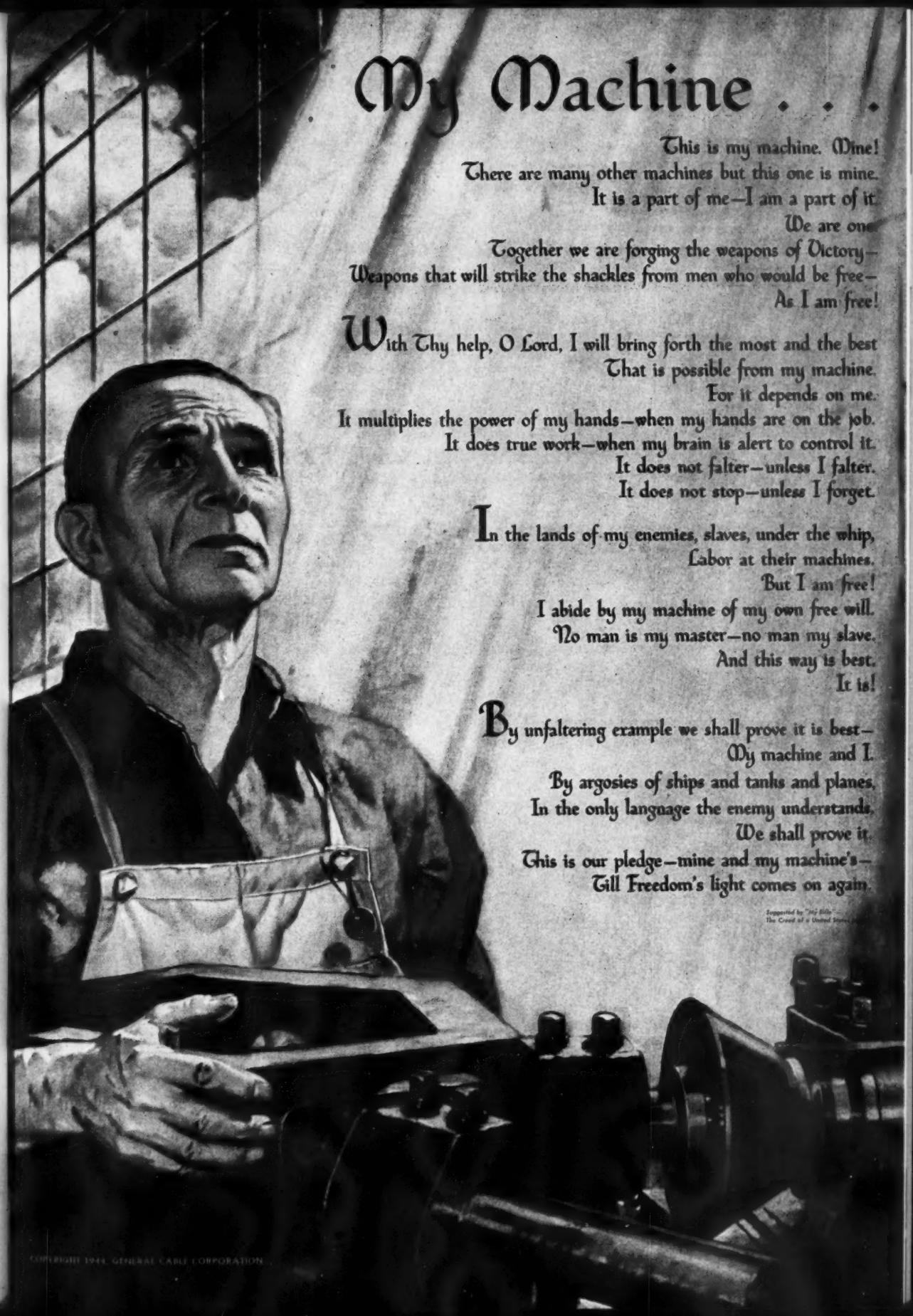
The pool was formed a little more than two years ago as a war emergency power measure, but has proven to be so successful that the interconnections and pool arrangements may continue after the war. Some of the advantages of the pool, Mr. George explained, were the leveling off of widely diversified costs and line losses, and installation of automatic controls which pick up the load and keep the flow of current going when any plant or system may temporarily be crippled or shut down by unexpected circumstances.

Among disadvantages of the pool are excessive wear on equipment of some of the companies which may be called upon at times to carry more than their share of the load, higher taxes and more stringent interstate government regulation, all of which, however, are justified by the necessities created by the war emergency.

"Too much emphasis, I think, is being placed on the idea that the Southwest Power Pool was created to furnish power to the aluminum plant in Arkansas," said Mr. George. "While this is a very important war installation, the fact remains that most of the power goes to other war and domestic installations throughout the area."

The pool operates in parallel across the Mississippi to Memphis, Tenn., and in Texas as far southwest as San Antonio and west to Amarillo. Before the pool was formed the Texas electric power operations were entirely intrastate. They were brought into the pool with the understanding that the interstate connections would be only temporary and that the Texas operations would still be regarded, for regulatory purposes, as intrastate.

Electric current losses vary from 50 per cent in some of the smaller systems to a very small percentage in some of the larger



My Machine . . .

This is my machine. Mine!
There are many other machines but this one is mine.
It is a part of me—I am a part of it.
We are one.
Together we are forging the weapons of Victory—
Weapons that will strike the shackles from men who would be free—
As I am free!

With Thy help, O Lord, I will bring forth the most and the best
That is possible from my machine.
For it depends on me.
It multiplies the power of my hands—when my hands are on the job.
It does true work—when my brain is alert to control it.
It does not falter—unless I falter.
It does not stop—unless I forget.

In the lands of my enemies, slaves, under the whip,
Labor at their machines.
But I am free!
I abide by my machine of my own free will.
No man is my master—no man my slave.
And this way is best.
It is!

By unfaltering example we shall prove it is best—
My machine and I.
By argosies of ships and tanks and planes,
In the only language the enemy understands,
We shall prove it.
This is our pledge—mine and my machine's—
Till Freedom's light comes on again.

Suggested by "My Bible—
The Creed of a United States

COPYRIGHT 1944, GENERAL CABLE CORPORATION

This war poster, the eighth of a series, is published as a tribute to the men and women in war plants from coast to coast who inspired the message.

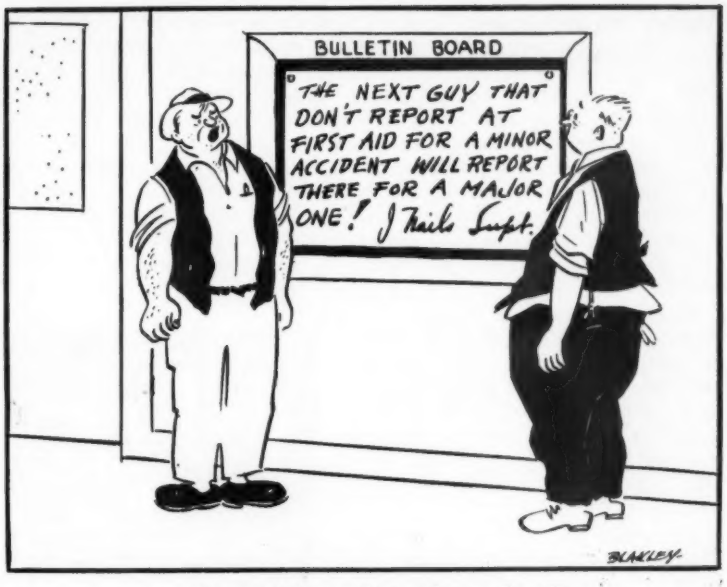
GENERAL CABLE CORPORATION

If engaged in war work: larger bulletin board copies (25 x 35 inches) are available with our compliments. Write GENERAL CABLE CORPORATION, 420 Lexington Avenue, New York 17, N. Y.

ones, and average the year around about 15 per cent, Mr. George explained.

Installation and coordination of telemetering and load control for the interconnected systems in the southwest area, have brought about greater equalization of power distribution during varying weather conditions among the ten power companies which are participating in the pool.

The meeting was the first of the 1944-45 season of the Oklahoma City section and was attended by 120 members and their guests. C. L. Farrar, University of Oklahoma, Norman, is chairman and W. A. Kitchen, Oklahoma Gas & Electric Co., Oklahoma City, is vice-chairman of the section.


BULLETIN BOARD
THE NEXT GUY THAT DON'T REPORT AT FIRST AID FOR A MINOR ACCIDENT WILL REPORT THERE FOR A MAJOR ONE! J Thiele Supt.
BLAKLEY

"I'm tired of preaching safety to them!"

Oklahoma Utility Company Announces Postwar Plans

A post-war expansion program, which will involve expenditures of more than $3,300,000, has been announced by R. K. Lane, president of the Public Service Company of Oklahoma, of Tulsa, Okla.

The work will be started as soon as the war is over and materials can be obtained, Mr. Lane said. Priorities have been requested and some have been obtained so that there will be no delay in the installation of additions and improvements to the physical property of the company.

Additions to equipment for the Tulsa and Hugo generating stations will involve expenditures of about $250,000. New highlines and equipment will be built and installed in the Lawton, Duncan, Chickasha, and Altus areas at a total cost of $825,000. Another $860,000 will be spent in installing new and additional primary and secondary service lines throughout the system.

More than $450,000 will be spent to improve and expand the company's gas system in the McAlester and Weleetka, Okla., areas.

The Public Service Company of Oklahoma now serves 123,000 customers in 214 towns in the eastern and southwestern sections of Oklahoma.

Photo shows exhibit of the Proctor Electric Company at the recent Housewares Show in New York City. Visitors recorded their choice of design for future iron and toaster designing.

Proctor Asks Public For Design Choice

Cleverness of presentation and use of the appeal angle enabled the Proctor Electric Company to literally "steal the show" with its exhibit at the wartime Housewares how at New York.

The firm, producers of "Never-Lift" iron and "Pop-up" toaster, presented what could be termed a "contrast" booth.

Plaster models of three irons and six toasters—each differently designed—were shown. Visitors were requested to vote for their preference. Ballots were recorded for guidance in future styling.

The idea was well received. Crowds clustered about the ballot boxes in almost endless lines and carefully examined each model before deciding.

The exhibit formed another link in the chain of nation-wide consumer research which Proctor is conducting. Cross analysis are continually being taken and those interviewed are asked what they want; what they'll prefer and what they'll buy.

Crosley Distributors Hear Postwar Plans

"If the cut-back in military goods production, immediately after the defeat of Germany, is as much as 40%, as has been officially predicted, The Crosley Corporation should be able to resume production of its peace-time products on the basis of its 1941 volume."

This statement was made by R. C. Cosgrove, vice-president and general manager, manufacturing division, The Crosley Corporation, to a large group of Crosley distributors from all parts of the country, attending a Crosley "C-Day" sales conference in Cincinnati.

This was the first of a series of three similar conferences of Crosley distributors at the Cincinnati headquarters of The Crosley Corporation and was the first nation-wide Crosley distributor conference to be held since America entered the war.

More than 100 Crosley distributors, representing thousands of Crosley retail dealers, heard Vice-President Cosgrove tell of the great growth and expansion of The Crosley Corporation during the past four years and heard him outline a program for continuing its activities on a high level of production after peace comes.

They heard J. H. Rasmussen, commercial manager, The Crosley Corporation, outline the company's program for the sale and distribution of its peace-time products as soon as their manufacture is resumed. The Crosley sales organization under Mr. Rasmussen's direction has been greatly expanded in anticipation of enlarged peace-time production.

From Shreveport, La., officials of the Electric Supply Co., distributors for The Crosley Corp., have been attending the Crosley C-Day sales conference in Cincinnati. Shown above with Crosley Corporation executives from left to right are: W. A. Wakeman, mgr., Electric Supply Co., Shreveport, La.; S. D. Camper, Crosley regional mgr.; Abry S. Cahn, pres., Electric Supply Co.; George Tanty, Crosley merchandise manager.

They made trips of inspection through the various Crosley plants in Cincinnati; Richmond, Ind.; and the extensive transmitting facilities of the broadcasting division of The Crosley Corporation at Bethany and Mason, Ohio.

In the Crosley engineering division, Lewis M. Clement, Crosley vice-president in charge of research and engineering, showed the visiting distributors the various war products.

They heard S. D. Mahan, director of advertising and public relations, manufacturing division, The Crosley Corporation, outline the company's forthcoming program of national and local advertising to promote the sale of Crosley's peace-time products soon to be available. They saw demonstrations by Crosley product managers of the Crosley radio receivers and Shelvador refrigerators which will be the first peacetime Crosley products to be placed on the market.

Without exception the visiting distributors were very enthusiastic about the plans and the program that Crosley has prepared for merchandising and distributing its post-war products.

(Left) H. W. Deuker, director of quality, The Crosley Corporation (extreme right) demonstrates some Crosley war products to group of Crosley distributors attending C-Day sales conference in Cincinnati. Left to right they are: Lee Bird, Crosley field service; E. C. Miller, sales mgr., The Shield Co., Ft. Worth, Texas; W. A. Schmid, The Shield Co., Ft. Worth, Texas; Leo J. Kelleher, sales mgr., The Sieg Co., Davenport, Iowa; R. J. Dorrance, mgr., Dorrance Supply Co., Youngstown, Ohio; Oscar J. Mannen, Lehigh Valley Distributors, Hazelton, Pa.; E. T. Allen, sales mgr., Dorrance Supply Co., Youngstown, Ohio; H. R. Bartlett, exec. vice-pres., The Sieg Co., Davenport, Iowa; G. P. McGregor, Larson Dist. Co., Denver, Colorado; Jerry Gelman, act. sales mgr., Anchor Dist. Co., Pittsburgh, Pa.; Fred Ray, Savannah, Ga.; E. Speese, Crosley field service; Harold W. Goldstein, gen. mgr., Anchor Dist. Co., Pittsburgh, Pa.; H. W. Deuker, Crosley director of quality. (Right) Mobile radio transmitter manufactured by The Crosley Corporation for the armed forces is demonstrated to group of Crosley distributors by D. A. Sandberg, Crosley engineering division, shown at extreme right. Others in the group, left to right, are: S. J. Rapier, pres., The Cooper-Louisville Co., Louisville, Ky.; Harry Roper, pres., Alamo Dist. Co., San Antonio, Texas; B. W. Turnley, Nashville Chair Co., Nashville, Tenn.; A. H. Gahns, Alamo Dist. Co., San Antonio, Texas; E. M. Cotter, Crosley merchandise mgr.; Cliff M. Newkirk, owner, Newkirk Radio Supply Co., Rapid City, S. Dakota; George Tenty, Crosley merchandise manager; D. A. Sandberg, Crosley engineering department.

KNOCK-OUT

by Pass & Seymour

POCKET-SIZE MINE

★ Pocket-size, but powerful enough to knock out the heaviest enemy tank—a multi-purpose weapon developed by the engineers of Pass & Seymour in cooperation with the Onondaga Pottery Company and Army Ordnance.

★ A soldier can carry a number of these powerful destructive mines. Smaller and lighter in proportion to power than any weapon heretofore produced, this mine contains *a new type firing means* also designed and produced by Pass & Seymour. And thanks to the skill and precision of our workers, it has Sure-Fire effectiveness against enemy machines and installations. For two years our three plants have been working on this new weapon, also on fuzes for the recently announced non-metallic mine.

★ In addition, our production of electrical wiring devices has been expanded to meet the demands of Army Engineers and the Navy. A large share of the war-ships, submarines and landing craft built for the Navy program are provided with new Pass & Seymour products made to Navy specifications.

PRECISION-MADE WIRING DEVICES

The experience gained in the manufacture of special wartime products will be reflected in the many advancements that will distinguish the post-war design of Pass & Seymour electrical equipment.

Consult the P&S Wiring Device Catalog for your requirements — send for an up-to-date copy today.

P&S

PASS & SEYMOUR, INC. SYRACUSE 9, NEW YORK

Illuminating Engineering Society Sponsors Research

In his report to the Society at its Annual Meeting and Technical Conference in Chicago, September 14, President H. M. Sharp reported on the establishment of the Illuminating Engineering Society Research Fund, for the purpose of research in lighting and related subjects. He also announced the appointment of a Board of seven Trustees, selected from among the country's industrial and professional leaders.

In accordance with the terms of the Trust Fund Agreement, the Board consists of the president and immediate past-president of the Illuminating Engineering Society as ex-officio members serving for one year in each capacity, and five prominent scientists and business men interested in lighting, vision and their allied subjects. As the present terms of service of each Trustee terminate the Board will elect succeeding members for terms of five years.

The Board of Trustees as recently appointed will include Dr. Conrad Berens, well known ophthalmic surgeon and pathologist; Laurence A. Hawkins, executive engineer of the Research Laboratories of the General Electric Company; Alfred H. Nicoll, president of the Graybar Electric Co.; Parker Haywood Daggett, dean of the College of Engineering, Rutgers University; A. W. Deller, patent consultant with the firm of Briesen and Schrenk; Howard M. Sharp, manager of the appliance and lighting bureau of the Buffalo, Niagara and Eastern Power Corp.; and Richard B. Brown, Jr., director of the Illuminating Engineering Division, Boston Edison Company.

With the beginning of the Society's fiscal year, October 1, 1944, Mr. Brown will conclude his term of service, retiring from the Board, and the 1944-45 President of the Illuminating Engineering Society, S. B. Williams, editor of Electrical World, will serve as ex-officio member on the Board of Trustees.

Much valuable data on lighting and vision are expected to result from the research program. Administration of the fund will be the exclusive responsibility of the Board of Trustees who, through a Research Executive Committee of six, appointed by the Board, will report on the progress of the various researches and arrange for the publication of results. Individual research projects are expected to be carried out with the cooperation of the research laboratories of leading universities and other institutions.

C. L. Crouch

Announcement was also made of the appointment of Cazamer L. Crouch, well-known illuminating engineer, as full-time technical secretary of the Society. This step in the expansion of the activities of the Society's technical and research programs, is expected to add greatly to the service of I.E.S. in the field of illumination.

Mr. Crouch's background of technical research in problems of illumination is especially fortunate in the work he will be undertaking for the Illuminating Engineering Society. A graduate of the University of Michigan, Mr. Crouch studied illumination under Prof. H. H. Higbie, one of the early and most eminent scientists in the field of illumination. He spent two years in engineering design and application with the Holophane Company and for five years was illuminating engineer for Wipperman Mitchell, Inc., electrical engineers and contractors in Buffalo, N. Y. Since 1935, when he joined the Buffalo Niagara Electric Company as industrial lighting and special application engineer, Mr. Crouch's efforts have been directed almost entirely to study and research in special lighting problems. Early in the war, and until his present assignment, Mr. Crouch served in the Bureau of Ships, U. S. Navy, as an engineering consultant on special problems of secret classification.

Florida Contractor Receives High Award

Award of an Army-Navy "E" to the Miller Electric Company and the Jacksonville Metal Manufacturing Company, of Jacksonville, Florida, and their employees, brought special recognition to two men whose contribution to the war effort, their fellow townsmen say, is even more outstanding than the award indicates.

The two, H. G. Miller, president, and James Dandelake, vice-president, of both companies, not only directed the successful execution of large war contracts but also exercised exceptional ingenuity in doing so, according to an official of the Jacksonville Chamber of Commerce.

The Miller Electric Company, one of the South's leading electrical contractors, handled many large pre-war contracts for defense projects, including very large military and naval installations.

After the United States entered the war, the Miller Electric Company accepted many important contracts, among them the electrical installations in the Bell Aircraft Company's vast Marietta, Georgia, Aircraft Assembly Plant where B-29 bombers are assembled. Efficient handling of this exceedingly important contract was one of the reasons for the award. D. W. Shaffer, long associated with the Miller Electric Company, was superintendent in charge of it.

The company also executed many contracts for installation of electrical equipment in United States Navy ships, achieving a distinguished record of more than one ship a week for a period of more than three years.

During the early days of the war when electrical equipment became increasingly difficult to obtain from established manufacturers, Miller and Dandelake established the Jacksonville Metal Manufacturing Company to overcome the handicap of shortages and difficulties of supply.

Starting from scratch and with such equipment as was immediately available, the new company began at once to manufacture various items of electrical equipment, including many complicated marine specialties for the Miller Company's various projects.

Within a relatively short time the company was able to move

Let Hotpoint Help You Keep Customers Happy

Use Our Service Helps

YOU know how important it is to keep customers' equipment in service during this emergency. The operation of Hotpoint major appliances is essential to the public welfare. Hotpoint recognizes its responsibility and is (1) making every effort to provide functional repair parts when needed, and (2) providing service information and help that can be very useful to you.

As to the use of our service helps, that is up to you. They are yours for the asking. Just call or write your Hotpoint distributor so you will receive our *Servicegrams, Parts Catalogs* and other helps that are available. And if you don't have the free *Service Guides* shown here, be sure to ask for them. Pocket size, they show by cut-away sections and simple explanations how to keep your customers' Hotpoint appliances working satisfactorily, through the emergency.

Teamwork means everything these days. For the sake of your business future, we are sure you are willing to do your part—and to use any help we can furnish. We make our pledge that Hotpoint will continue to give real meaning to the word "service."

Edison General Electric Appliance Company, Inc.
5614 West Taylor Street, Chicago 44, Illinois

BETTER CARE LESS REPAIR

ARMY-NAVY "E" FOR EXCELLENCE IN WAR PRODUCTION

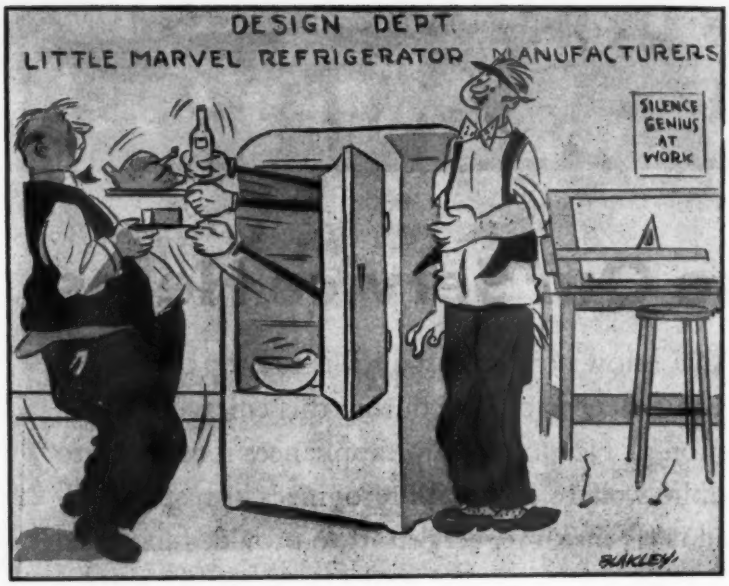
ELECTRIC Hotpoint KITCHENS

from its early quarters, which were cramped and limited, into a new plant of adequate size and with an ample supply of modern manufacturing equipment.

Mr. Miller gives unreserved credit for the accomplishments of both companies to the design skill and boundless energy of his associate, James Dandelake, who has been in a large measure responsible for the production achievements of the Jacksonville Metal Manufacturing Company.

The Army-Navy "E" award to the two companies was made at a colorful ceremony held in the ballroom of the Hotel George Washington, in Jacksonville, on Saturday, August 26.

United States Senator Claude Pepper accepted the award in behalf of the company. Admiral Andrew C. McFall, chief of Naval Air Operations Training, and numerous other Navy, Army and civilian dignitaries took part in the function.



"It's simpler than the revolving model our competitor is getting out. Ours just hands you things!"

Allis-Chalmers Plans Salutes To Industry in Broadcasts

Men and women workers of the Electric Light and Power Industry will be honored by Saturday night's Allis-Chalmers broadcast of the Boston Symphony Orchestra in the first of a series of six salutes to American industry and American workers.

These salutes scheduled by the Allis-Chalmers Manufacturing Co. will pay tribute to the distinguished service of both management and labor in time of national crisis. They will be offered as brief intermission features from October 14 to December 23.

In addition to the Electric Light and Power Industry, salutes will be tended Mining, Chemical and Processing, Pulp and Paper, Steel, and Oil industries.

Allis-Chalmers advertisements featuring these salutes will run in trade publications and newspapers in key production cities. Industrial executives, city officials and heads of business groups in each of these cities will be notified in advance of the highlights of the particular broadcast.

Broadcasts of the Boston Symphony Orchestra are heard for the second consecutive year (8:30 P.M., E.W.T., Saturdays, Blue Network) under the baton of Dr. Serge Koussevitzky. The 31 scheduled broadcasts will include guest artists William Primrose, violist; Zino Francescatti, French violinist; Luboshutz and Nemenoff, duo-pianists; and Jesus Sanroma, pianist.

New Generating Facilities Planned for Tampa Electric

A power expansion program started in 1940 by the Tampa Electric Company, and later suspended by the government because of a shortage of critical materials, is now to be resumed, and will give the City of Tampa and surrounding territory served almost a 50 per cent increase in electric generating capacity.

The program, with WPB approval, calls for an expenditure by the company of $1,600,000. Chief item in the program is the installation of a new and additional 15,000 kilowatt turbo-generator at the West Jackson street power plant, together with a new 160,000 pound-per-hour boiler, and other auxiliary equipment and improvements. This includes improvements to the 13 kilovolt transmission lines to the 11th avenue substation, a new switching structure at this station, and a new 200-foot stack.

The new generator will be capable of a maximum load of 18,750 kilowatts, which together with the 42,500 kilowatt capacity at present, will give Tampa and surrounding consumers a new capacity of 61,250 kilowtts.

G.E. Service Manual Aimed to Aid Home Front

The most comprehensive household refrigerator service manual ever offered by General Electric's appliance product service section to servicemen has been released for distribution. It covers all models equipped with the famous G-E Scotch-Yoke Sealed machines.

In a letter to distributors, W. C. Noll, section manager, says the manual contains the service information on all G-E Sealed machines manufactured since 1934, "and there are well over 3,000,000 of these machines in customers' homes." The many different models include the later style Monitor Tops, all the Sealed Flatop models and the numerous special cabinet types.

All information in the manual is easy to find and use with the expanded cross-reference type index. All of the "whys" and "hows" are covered. Well illustrated with over 300 pictures and drawings the new manual has more than 200 pages. Detailed descriptions give a full understanding of the machines and cabinets.

Sturdily bound, the manual is 8½ by 11 inches. A heavy cover affords protection from hard usage and its attractive design establishes a plan for future G-E service publications. The book is distributed through General Electric distributors at 75 cents per copy.

for... Speed

Low Cost

In Re-maintenance

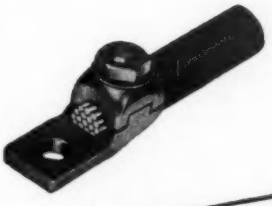
Connect With the Line of Least Resistance!

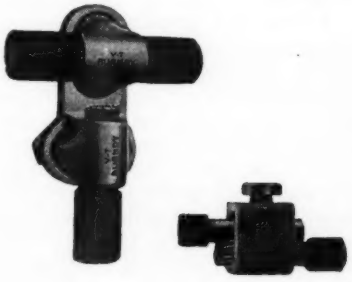
The war record of the electrical industry in "holding the line" under unprecedented power demands, and the shortages of materials and manpower, is a *monument of praise* to the maintenance engineers whose planning and "know-how" enabled them to conquer problems heretofore thought impossible.

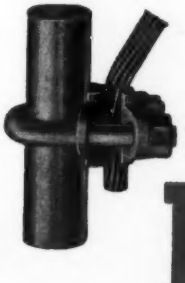
This same "know-how" is now being brought to bear on the big re-maintenance job just ahead . . . to insure maximum efficiency and *permanency* of many war-born installations.

Logically, Burndy engineers are cooperating on many of these programs, for wherever *speed, permanency* and *low-cost* are the prime connector requirements, Burndy has the answer. This complete connector engineering service is yours, too, for the asking. Burndy Engineering Co., 107 Bruckner Boulevard, New York 54, N. Y.

IN CANADA: Canadian Line Materials, Limited, Toronto 13







Headquarters for CONNECTORS

Burndy

Street Lighting Campaign Launched by Industry

One of the most important services which can be rendered in the direction of adequate lighting in the heavy traffic days after the war will be the provision of practical information for the use of:

1. Municipal officials who must make the decision and have it agreeable to the public.

2. Utility executives who must provide new equipment and electrical energy and who should receive fair payment.

3. The public who will do the dieing in traffic accidents unless considerable street lighting is installed, and who consequently need to understand its values.

These three types of information will be furnished on an organized scale by means of an Industry Promotion Program sponsored by the Street Lighting Section of the National Electrical Manufacturers Association, through the Street and Traffic Safety Lighting Bureau.

The program is outlined jointly by V. J. Lajeunesse, chairman of the section and A. F. Dickerson, chairman of the bureau. The public will be introduced to the plan through various channels of information and through direct utility outlets.

"It is our belief," Mr. Lajeunesse said, "that if the utilities are properly sold on the idea of promoting street lighting, they will in turn sell an important segment of the public through talks to women's clubs, civic groups, merchants' associations, through window and lobby displays, the circularization of literature provided by the Street and Traffic Safety Lighting Bureau and through the setting up of demonstration streets and areas."

As part of the appeal to municipal officials, the Bureau will prepare a monthly newsletter to be sent directly to them or be distributed through the utilities or through the facilities of the Street and Traffic Safety Lighting Bureau. This newsletter will contain a condensation of news stories, articles and editorials on street lighting appearing in current magazines and newspapers; street lighting promotion plans and activities of cities; accident statistics and street lighting promotion material. It will be supplemented by monthly direct mail pieces containing before-and-after pictures and which in subject matter and sales appeal will parallel and expand consumer advertising.

Part of the plan also calls for a series of strong advertisements directed at municipal officials and utility executives, to be launched in trade publications appealing to those groups.

An important phase of industry promotion directed toward the utility executives will be another newsletter, somewhat similar to the one for municipal authorities, also to be supplemented by monthly direct mail pieces stressing the public relations value of good street lighting and showing how street lighting can be put on a profitable basis. Both of these media are expected to serve as a medium for the exchange of ideas, with the basic theme tying in with municipal official and consumer promotion.

The utility advertising plan of the Section and Bureau for the next several months also calls for a series of display ads in electric utility trade magazines.

Government News and Views For the Electrical Industry

A reserve of 37,000 tons of carbon steel, plus other materials in proportion, has been set aside for the fourth quarter of 1944 to cover a number of contingent, non-military production programs set up by the War Production Board's Office of Civilian Requirements and several other programs proposed by the War Food Administration, Office of Defense Transportation and WPB's Office of War Utilities, WPB has announced.

Most of the programs are still in the paper stage and, even if carried out in full, would not mean that the products would be available on a wide enough scale to satisfy even the essential civilian demand, WPB cautioned. The beginning of work under them will depend entirely upon the availability of facilities, manpower and components, officials said.

At present, most of the manufacturers whose facilities would be available for the normal production of these items are occupied with war contracts and the feasibility of the proposed programs would depend largely upon partial or complete cuts in some of these contracts, the official said. However, the materials will be available to those manufacturers whose facilities are already open for civilian production and who can satisfy the manpower requirements.

The programed items are domestic mechanical refrigerators, domestic washing machines, sewing machines, vacuum cleaners, miniature incandescent lamps, electric ranges, batteries for farm radios, electric fans for industrial and commercial use, commercial laundry and dry cleaning equipment, electric sewing machines, class "B" oil burners, stokers of classes A and B, domestic electric water heaters, electric and spring-wound alarm clocks, oil storage tanks, insect screen cloth, and hydro-pneumatic tanks.

These items were selected for programing because of the extreme need for them on the home front, because of the critical common components required, and because the manufacturing complexities of some of them required careful study by WPB's industry divisions in order that production might be arranged without interference with war needs.

* * *

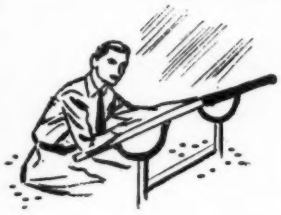
Material has been authorized for the production of 30,000 domestic type oil burners during the fourth quarter of 1944, for replacement and hardship cases, the War Production Board announced.

Production of this type of oil burner has been prohibited since April 15, 1942, but essential replacements have been made from inventories of manufacturers and dealers. These inventories have become depleted, however, and individual consumers are now experiencing considerable difficulty in finding burners to meet their requirements. For this reason it was necessary to resume production of the domestic type burners, WPB officials explained.

Federal

INDUSTRIAL CONTROLS

engineered to *outlast* the equipment they control



Don't be surprised if the Federal controls you buy for one machine *outlasts* two, three or even four others. For—Federal builds 'em for long life. Designs them to withstand the rigors of hard usage. To take in stride shocks . . . vibrations — or what have you. Expect to find, too, ample wiring space . . . easily removable contacts . . . efficient operation . . . ease and economy in maintenance. For safe and dependable control of motor-driven machinery depend on Federal.

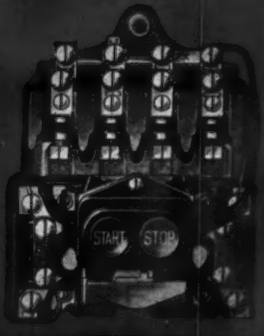
A. Reversing magnetic starter Type "A" sheet steel cabinet

B. Combination motor starter Type "D" weatherproof cabinet

C. Manual Motor starter Type "A" sheet steel cabinet

D. Magnetic Motor starter Type "U"—inside only

E. Push button station



FEDERAL ELECTRIC PRODUCTS COMPANY

Plants at: 1429 Park Street, Hartford, Connecticut and 50 Paris Street, Newark, New Jersey

NORGE Offers You the PROFITS and EXTRA SALES of a Complete Line of Major Home Appliances

EVERY SUCCESSFUL DEALER KNOWS—

One outstanding appliance will sell others of the same brand. A family pleased with a Norge Rollator refrigerator is a ready prospect for a Norge range. It's basic appliance selling!

And that's why Norge dealers will enjoy *profits* from *extra sales.* Norge will give them a *complete* line of brilliant major home appliances under one famous name. And in addition to the quality line of Rollator Refrigerators, Gas and Electric Ranges, Washers and Home Heaters, Norge will offer new pace-setters in postwar profit-makers for Norge dealers to present to America's waiting homemakers . . . all the opportunities for a great future.

Norge means new products for waiting home owners to buy. Norge means new products for far-thinking dealers' profit. Norge means a *successful future* for Norge dealers!

Norge Division, Borg-Warner Corporation
Detroit 26, Michigan

A BORG-WARNER INDUSTRY

ONE FAMOUS NAME—
...All Major Appliances
You'll have a great future with
NORGE

Permission to use solder having up to a 50% tin content by weight, has been granted for three additional purposes, the War Production Board reports. Previously, solder with this percentage of tin was permitted only for ammunition boxes.

Revision of Tin Order M-43 permits this weight to be used for the manufacture, repair and maintenance of (1) refrigeration equipment; (2) radio and radar equipment, and (3) for the manufacture and repair of any type of indicating, recording, measuring or controlling instruments and their associate control valves, excluding manufacture and repair of gas meters. Solder containing 35 per cent tin is permitted for manufacture, and 38 per cent for repair of gas meters, officials explained.

The action with respect to radio and radar equipment restores to that industry the right to use 50 per cent tin content solder. The industry has been using a 35 per cent tin content solder which slowed down production, officials said.

The amendment also clarifies the provision calling for certification from distributors of solders and babbitt metal. The distributor must now certify to the manufacturer that he will not re-sell to any user unless he has received the certificate from the user as required by the order, officials said.

* * *

Unless projected requirements for copper wire and cable are materially altered, the reduced military demands, after "Victory in Europe" Day, will permit copper wire and cable mill facilities to accept and deliver orders other than authorized controlled material orders in a pattern and of a copper content approaching pre-war levels, the Copper Wire and Cable Industry Advisory Committee was informed at a recent meeting, the War Production Board reports.

WPB plans elimination of all unnecessary governmental controls, reports and directions on cessation of European hostilities, officials said. Retention is intended only for those controls needed to insure fulfillment of military requirements for victory over Japan, it was emphasized.

* * *

Manufacturers and assemblers of fluorescent lighting fixtures and electrical wholesalers selling ballasts and transformers for such fixtures must each file a report stating ballast and transformer inventories, the amount used and the amount on order for the year 1944, the War Production Board announced recently.

These reports, due on or before September 15, 1944, are to be made on WPB Form 3894. They must be filed by all manufacturers, assemblers and wholesalers who, on September 1, will have in inventory 100 or more units of all types of ballasts and transformers for fluorescent lighting fixtures; or who used 500 or more units in 1944; or who had an order for delivery of 500 or more units in 1944.

Ballasts are used with hot cathode fluorescent lighting fixtures; transformers are used with the cold cathode type of fixtures. They are made by the same manufacturers and utilize the same production facilities as radio and radar coils and other transformers for combat equipment. Because of heavy military demand, production of ballasts and transformers for fluorescent fixtures has been curtailed by WPB. This, in turn, has curtailed production of the fixtures.

Information compiled from reports made on WPB Form 3894 is needed to determine whether the present production of ballasts and transformers is sufficient for essential fluorecent lighting installations and to permit analysis of their distribution.

Copies of WPB Form 3894 have been mailed to approximately 250 manufacturers and assemblers and to 1,750 electrical wholesalers. Persons who should file the report and do not receive the form by mail should obtain copies from the nearest WPB field office, officials said.

* * *

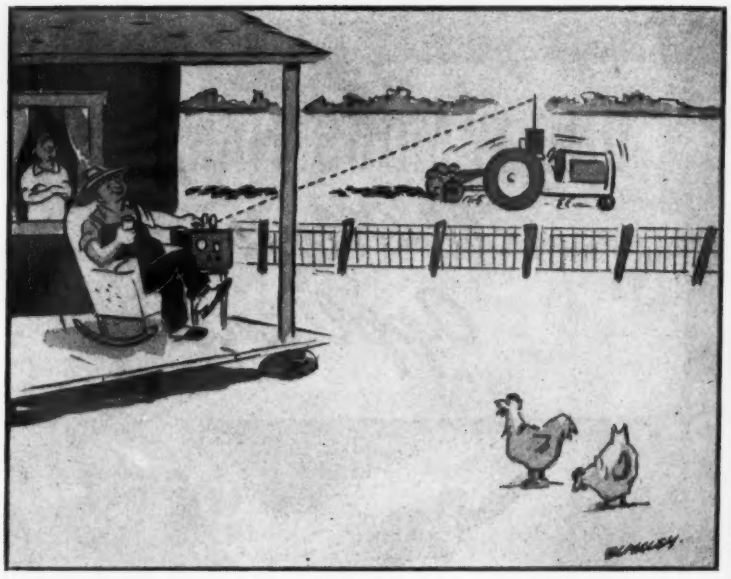
Additional material has been authorized to increase fourth-quarter production of electric water heaters for civilian use from 12,500, as originally approved, to 30,000, the War Production Board's Office of Civilian Requirements announced.

This increase is necessary because of the acute need for such equipment, WPB officials explained.

Production of electric water heaters for civilian use was resumed during the third quarter of 1944, beginning July 1, at the rate of 125,000 for the quarter. Prior to that time production for civilians had been prohibited except when it was found necessary to allow some production on an appeals basis.

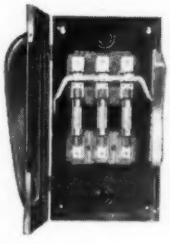
Order L-185, controlling production of water heaters, will be amended soon to provide for the increase in production permitted by the additional allocation of material.

Production of electric water heaters for the armed services and NHA is not included.



"Mix me up another long cool one, Maw, and then don't bother me while I'm plowing."

Pre-eminent!



Vacu-Break

SAFETY SWITCHES WITH "CLAMPMATIC" CONTACTS

Even if we wished, we could not meet the nation's total demand for Safety Switches . . . But it is gratifying to realize that we are attracting the greater part of the business placed by users who insist on highest quality.

This they get in BullDog with its exclusive Vacu-Break principle of arc suffocation . . . *plus* the Clampmatic feature which assures contacts tight as a bolted connection . . . *plus* stylined cabinets of modern design . . . all at no price penalty! They pay no more but get a lot more!

Capacities from 30 Amp. to 1200 Amp.

BULLDOG

ELECTRIC PRODUCTS COMPANY

BOX 177, R. PK. ANNEX, DETROIT 32, MICHIGAN
In Canada: BullDog Electric Products, Ltd., Toronto
Field Engineering Offices in All Principal Cities

Buy More War Bonds

Also Manufacturers of

SaftoFuse Panelboards—Switchboards—Circuit Master Breakers—BUStribution Duct, for "plug-in" power—Universal Trol-E-Duct, for flexible lighting—Industrial Trol-E-Duct, for movable "loads."

PERSONAL NOTES
About Men You Know

Frank Wilhelms has joined the Edwin L. Wiegand Co., Pittsburgh, as assistant to the president. Mr. Wilhelms was formerly advertising promotion manager for the Pittsburgh *Post-Gazette*. Previously he had conducted his own advertising agency. His headquarters will be at the Pittsburgh plant and he will devote his attention

Frank Wilhelms

to the promotion of Chromalox electric range units and electric heating units for industry.

* * *

With postwar planning in view, announcement of changes in the Engineering Department of the Weston Electrical Instrument Corporation, Newark, N. J., have been made by **Caxton Brown,** president of the company.

John H. Miller, who has been assistant chief electrical engineer, has been promoted to chief electrical engineer.

Frank X. Lamb has been made assistant chief electrical engineer. He formerly was a project engineer.

Karl M. Lederer, formerly assistant chief engineer, is now assistant director of research.

W. N. Goodwin, Jr., continues as vice-president in charge of research and engineering. He relinguishes his post as chief engineer, but retains his present title of director of research. He also will be available for consultation and guidance in engineering matters in general.

* * *

J. S. Sayre, president of Bendix Home Appliances, Inc., South Bend, Indiana, has announced the appointment of **W. A. Becker, C. J. Laufersweiler** and **C. D. Mitchell** as divisional sales managers. Mr. Becker will be midwest sales manager, Mr. Laufersweiler, west coast sales manager and Mr. Mitchell, southeast sales manager. All three were district managers on the automatic home laundry previously.

At the same time it was announced that **Paul Hichborn** has been appointed retail merchandising manager of Bendix Home Appliances, Inc., South Bend, Indiana. Mr. Hichborn has resigned his position as merchandise manager of Gooderham and Worts, Hiram Walker subsidiary. He has spent over fifteen years in the electrical appliance industry, ten of them as retail sales manager of Rex Cole, Inc., New York General Electric Appliance distributor with responsibility for the sales of refrigerators, ranges, washers and electric kitchens. Later he was sales manager for Electrical Housekeeping, Inc., of Cleveland, Ohio, General Electric appliance distributor. For several years later he was retail merchandising manager of the Air Conditioning and Heating Department of General Electric at Bloomfield.

* * *

Ward R. Schafer has been appointed general sales manager, Edison General Electric Appliance Company, according to **R. W. Turnbull,** president. Now regional sales manager of the company's western region at San Francisco, Mr. Schafer has been a sales and engineering executive in Hotpoint's organization for almost twenty years.

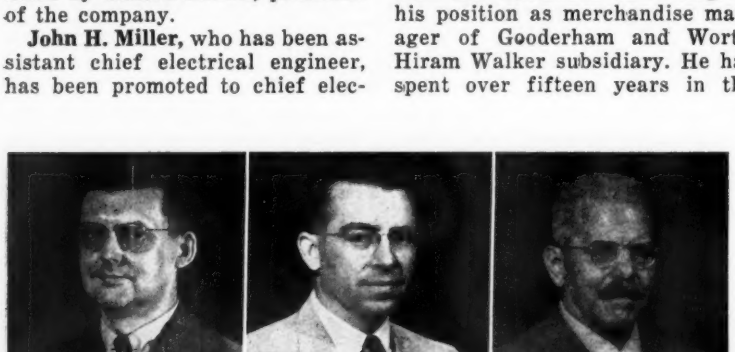
Ward R. Shafer

He joined the company in 1924 as an engineer in commercial cooking sales. Later he was manager of product service for several years, and at the time war production halted sales, he was manager of the range sales division. Mr. Schafer was given a leave of absence in 1942 to join George A. Fuller company as superintendent of construction on a $30,000,000 butadiene plant at Houston, Texas. He rejoined Hotpoint last April.

Mr. Schafer was graduated in electrical engineering from Michigan State College in 1923.

* * *

Appointment of **Thomas P. James** as manager of the newly-created Special Goods Section of the Sales Department of Proctor



John H. Miller **F. X. Lamb** **Karl M. Lederer**

Electric Company was announced recently by **R. M. Oliver,** vice-president in charge of sales.

Mr. James is well-known in the electrical appliance industry, having been associated with it for more than fifteen years. He joined the Proctor organization approximately six years ago. Previous to the war he served successively as district sales manager at Detroit and Columbus, Ohio, respectively. At the changeover to war production, Mr. James was named war contracts manager. He will also continue to serve in that capacity.

* * *

T. B. Willard has been appointed Southeastern District Representative of the General Electric Company's Electronics Department and will report to District Manager **C. J. Hendon,** it has been announced by **A. A. Brandt,** general sales manager of the department.

T. B. Willard

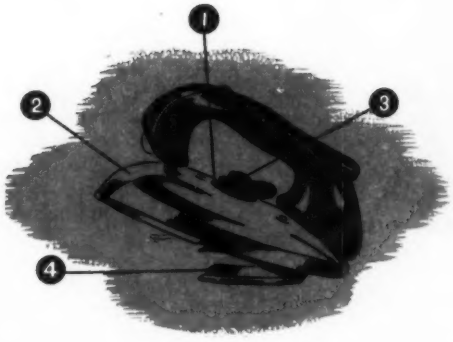
In this capacity, Mr. Willard will be responsible for the sale of Tube Division products of the department in the district. His headquarters will be at the General Electric Company, Red Rock Building, Atlanta, Georgia.

Born in Atlanta, Georgia, Mr. Willard attended Georgia School of Technology and in 1927 joined the Accounting Department of the General Electric Company in Atlanta, transferring to the Advertising and Sales Promotion Section of the Apparatus Department there in 1935. Two years later he was appointed office manager of the Edison G-E Appliance Company, in Atlanta, and in 1939 was made territorial manager for Hotpoint appliances in the states of North and South Carolina with his headquarters in Charlotte, N. C. Due to curtailment in production of major home appliances, he returned to Atlanta to cover the en-

If you sold PROCTOR

NEVER-LIFT SPEED IRONS

before the war...



...your sales talk *MADE NEWS*

with these PROCTOR "firsts":

1. (1929) First Fabric Dial
2. (1934) First Pressure-Sealed element
3. (1939) First Speed Selector
4. (1939) First *and only* Never-Lift feature!

TOMORROW...

...You'll make news again with the still finer Never-Lift iron coming from Proctor after the war. Meanwhile let's all *"Back the Attack"* with War Bonds.

PROCTOR

NEWSMAKER IN APPLIANCE MERCHANDISING

PROCTOR ELECTRIC COMPANY—*DIVISION,* PROCTOR & SCHWARTZ, INC.
PHILADELPHIA 40, PENNSYLVANIA.

tire southeast as commercial cooking specialist for Hotpoint in 1942; when commercial equipment production was cut again, he returned to the Apparatus Department, where he has remained until his present appointment.

* * *

Albert Pfaltz has been appointed director of public relations of the Society of the Plastics Industry, Inc., according to an announcement by **George K. Scribner,** president of SPI. For the past eight years a member of the senior staff of the National Electrical Manufacturers Association, Mr. Pfaltz was active in NEMA publicity, business development programs, and postwar planning, and was editor of the *Adequate Wiring Reporter,* newspaper of the National Adequate Wiring Program.

Albert Pfaltz

* * *

Major changes in the General Electric Company's home appliance and construction material sales organization were announced recently by **H. L. Andrews,** vice president of the company.

C. R. Pritchard has been appointed to the newly-created position of general sales manager of the G-E appliance and merchandise department, and will be responsible for all sales and sales policies of appliances and construction materials, responsible to the vice president. Other appointments placed **A. M. Sweeney** in the position of manager of sales of all major appliances, and **C. W. Theleen** in the post of manager of sales of all traffic appliances and vacuum cleaners. Both will be responsible to Pritchard, as will **J. H. Crawford,** who continues as manager of sales of G-E construction materials. **A. C. Sanger,** appliance sales manager for the past year, has resigned.

A. L. Scaife has been appointed merchandising manager for the entire appliance and merchandise department, and will also be responsible to Pritchard. **L. H. Miller** immediately becomes manager of the household refrigerator division, and **C. J. Enderle** manager of the company's electric sink and cabinet division.

In announcing the changes as vitally necessary to General Electric's continuance postwar as the largest maker and seller of electric home appliances in the world, Andrews pointed out that the resumption of consumer goods manufacture hinged directly upon the progress of the war, since the company's facilities are still engaged full-time in war production.

* * *

W. L. Fattig has been appointed southeastern district representative of the General Electric Company's Electronics Department and will report to **C. J. Hendon,** district manager, it has been announced by **A. A. Brandt,** general sales manager of the department.

In this capacity Mr. Fattig will be responsible for the sale of products of the Transmitter Division of the department in the district. His headquarters will be at the General Electric Company, Red Rock Building, Atlanta, Georgia. He was previously acting supervisor of the Technical Service Section in the Receiver Division, Bridgeport.

Mr. Fattig has been in the radio business since 1928. Born in Baltimore, Ohio, he was graduated from Georgia School of Technology, in 1927, with a B.S. degree in electrical engineering. He joined General Electric in 1935, when he went to work with G.E. Supply Corporation, at Atlanta, Georgia, as service supervisor. In 1937, Mr. Fattig became a radio field engineer for the G.E. Receiver Division and covered Atlanta and New Orleans. In 1940, he was called to Bridgeport, Connecticut, to work in the Technical Service Section as acting supervisor.

W. L. Fattig

* * *

Appointment of **Harold W. Schaefer** as assistant manager of the newly-formed Radio Receiver Division of the Westinghouse Electric and Manufacturing Company has been announced by **Walter Evans,** vice-president.

Mr. Schaefer, the new assistant manager of the Radio Receiver Division, studied electrical engineering at Lewis Institute and physics at the University of Chicago. In 1926 he joined the Majestic Grigsby Grunow Company as a radio engineer, and was soon made chief inspector and later engineer in charge of special development and manufacturing and assistant to the president.

In 1932 he conducted research for Grunow on the first low-pressure refrigerant and the compressor for its use. From then until 1939, Mr. Schaefer was successively in charge of refrigerator cabinet manufacture and compressor assembly; chief inspector of radio and refrigeration; in charge of the methods department for all Grunow plants, and finally assistant to the president in charge of manufacturing in all plants.

* * *

Leonard Kebler, president of the Ward Leonard Electric Company for 40 years, became chairman of the board of directors, a newly created post, at a meeting held August 15, 1944.

Mr. Kebler, recently elected president of the National Electrical Manufacturers Association, has been with the Ward Leonard Electric Company for 45 years, being made its president in 1904 when H. Ward Leonard, founder of the Company, retired from that office.

Dawson J. Burns, vice president of the company since 1909, was elected to succeed Mr. Kebler as president. Mr. Burns became associated with the firm in 1902, and in 1909 was elected vice-president.

Arthur A. Berard was elevated to executive vice-president and general manager, having served successively as salesman, general works manager, and general sales manager. Mr. Berard joined the manager.

NATIONAL ADVERTISING TO HELP YOU

JOIN THE OTHER 16,000 "U" PLAN DEALERS

When I am my Gunner's Mate
* When a certain gunner in Uncle Sam's Navy comes home to marry me—and stay—I'm going to need the very best appliances
U plan for V day
PERSONALLY I'M PLANNING A Universal PEACE
U plan for V day
CHECK UNIVERSAL APPLIANCES AND HOUSEWARES HERE!
The "U" Plan for "V" Day is going to bring some real peace and happiness into my life after the war! I'm going to have the best housekeeping aids that money can buy — appliances and housewares made by Universal! You'll be keen on this "U" Plan, too — whether you are dreaming of a new home, or planning to fix up your present one! Here's how it works: (1) Check on this page the Universal appliances you will need. (2) Add up their estimated values. (3) Put that sum into War Bonds. (4) Ask your local dealer today to put you on his priority list.
You make no down payment, you're under no obligation! But you do put yourself in line to be lucky "first" to get Universal products
Send for the "U" Plan for "V" Day Plan Book which gives added details
LANDERS, FRARY & CLARK
ADVERTISING AS APPEARING IN:
AMERICAN HOME • BETTER HOMES AND GARDENS • ELECTRICITY ON THE FARM • FARM JOURNAL AND FARMER'S WIFE • GOOD HOUSEKEEPING • HOUSE AND GARDEN • HOUSE BEAUTIFUL • LADIES HOME JOURNAL • LOOK • McCALL'S PARENTS' • SATURDAY EVENING POST • SUNSET • WOMAN'S HOME COMPANION
ARMY E NAVY

Full-page color advertisements featuring Universal's "U" Plan for "V" Day are appearing in 14 national magazines during 1944. A total of over 40 million messages will explain the "U" Plan to consumers, and help you get together with them for post-war planned purchases.

In addition to national advertising, Universal is bringing many important merchandising aids to all "U" Plan dealers. *You don't have to be a Universal dealer to join the "U" Plan—fill in coupon now! It costs you nothing!*

Universal Electrical Appliances distributed in Canada exclusively by Northern Electric Company, Limited

UNIVERSAL

LANDERS, FRARY & CLARK • NEW BRITAIN, CONN.

LANDERS, FRARY & CLARK Dept. ES
New Britain, Conn.

Gentlemen:

I wish to become a "U" Plan Dealer—please send free "U" Plan for "V" Day Plan Book to

*Name*_____

*Address*_____

*City*_____ *State*_____

Approved by the Underwriters'

For Complete Wiring Systems USE FLAMENOL BUILDING WIRE

(Small Diameter—Thermo-plastic Insulated)

Type SN

FOR DRY LOCATIONS

Type SNW

FOR WET LOCATIONS

USE Flamenol* Building Wire for new wiring, rewiring or maintenance wiring. Use it for feeders, branch circuits or special wiring. This all-purpose, small diameter, thermo-plastic insulated building wire is easy to install and will give long dependable service. Two types are available: Type SN Flamenol wire for use in dry locations; Type SNW Flamenol wire for use in wet locations.

Whole buildings can be wired with Flamenol Building wire using either Type SN or Type SNW or both—whatever conditions require. The insulation of both these wires has long life, is high in dielectric strength, is flame retarding and is resistant to oils, acids and alkalies. In addition, Type SNW Flamenol wire insulation has low moisture absorption.

For further information see the nearest G-E Merchandise Distributor or mail the coupon for descriptive folders.

General Electric Company, Section W1041-16
Appliance and Merchandise Dept.,
Bridgeport, Conn.

Sirs: Please send me the folders on Type SNW and Type SN Flamenol Small Diameter Building Wire.

Name.....

Address.....

City.....State.....

BUY WAR BONDS AND KEEP THEM

Hear the General Electric radio programs: "The G-E All Girl Orchestra" Sunday 10 P.M. EWT, NBC. "The World Today" news every weekday 6:45 P.M. EWT, CBS.

*Reg. U.S. Pat. Off.

GENERAL ELECTRIC

Announcement of the appointment of **Ellwood R. Berkeley** as sales promotion manager of the Premier Division of the Electric Vacuum Cleaner Co., Inc., has been made by **R. B. Wilson,** executive vice-president. Mr. Berkeley will assume his new position at the home office in Cleveland about October 1, 1944. He has recently obtained his release from OPA with which organization he has been associated for the last two years in the Consumer Durable Goods Division, in Washington, D. C.

Mr. Berkeley is not new to the electrical appliance field or to Premier. Just prior to his wartime government service he was New York sales division manager for Premier. Before that he was with Hecht's in Washington, Premier assistant division sales manager in Philadelphia, and Premier division sales manager in Chicago.

* * *

Lloyd L. Spencer, vice-president and general sales maanger of the Stromberg-Carlson Company has announced the appointment of **David S. Cook,** of Rochester, N. Y., as sales promotion manager for the company. In his new capacity with the fifty-year-old communications firm, Mr. Cook will work directly under **Stanley H. Manson,** manager of public relations, advertising and sales promotion.

Mr. Cook will take charge of the expanding program the company has under way in the field of sales training and in addition will direct the company's several publication activities.

At the same time the appointment of a southern region radio sales representative by **Clifford J. Hunt,** sales manager of the company's Radio Division, was announced.

The new regional sales representative is **Frank J. McCloskey,** of Irvington, N. J. In his new position, Mr. McCloskey will represent the radio division of the communications' company in the southern and southeastern states, extending south from North Carolina, west to Tennessee, and southwest to Texas, contacting distributors and key dealers of the Stromberg-Carlson radio, F-M and television lines in that area.

BUY WAR BONDS

NEW EQUIPMENT and MATERIALS

Silex Offers New Package

Dressed up deluxe in tune with its own modernity, Silex glass coffee makers in the 8-Cup Bretton style will now arrive at dealer stores in a trim, blue-and-white package, the product of master designers, it was announced by the Silex Company, Hartford, Conn.

The new pasteboard box, with corrugated filler within to protect the product in shipping, is the first of a new series of packages contemplated for more attractive display of all Silex products, the list of which is being expanded for postwar markets.

The makers of Silex are confident that the new packages will result in greater featuring and display of all Silex products and, hence, easier and increased sales for the dealer.

New Industrial Unit

Curtis Lighting, Inc., of 6135 W. 65th St., Chicago 36, Ill., has designed a new series of fluorescent industrial units for two and three 40-watt lamps for use in industrial plants, airplane hangars, and other industrial interiors.

Catalog No. 1626-C is the two-lamp unit; Catalog No. 1627-C, the three-lamp unit. The units can be hung individually, or in continuous lines for higher intensity by means of chain, conduit or cable. They can be used over work benches, machines, etc., or for general lighting. Only four-foot units are available.

Outer surface of reflector and housing is painted gray; inside white reflecting surface is of Fluracite. Steel reflector and housing. Ballast and starters mounted on top of wiring channel. Units are wired for 110-120 volts.

Myers New Water Systems

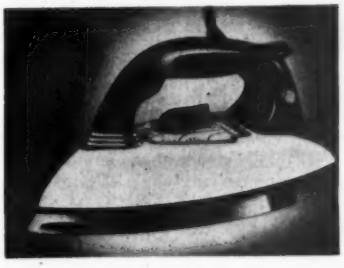
In the vanguard of new products of interest to the trade, as well as to millions of farmers and residents of small towns and suburban districts, is the new farm and home water system designed by the F. E. Myers & Bro. Company, of Ashland, Ohio.

This new water system is built in four sizes. Shallow well capacities range from a maximum of 530 gallons per hour for the ¼ hp unit to 2,200 gallons per hour for the 1 hp system. Capacities of the deep well systems are equal to the manufacturers present models.

Of special interest to water system dealers is the fact that the design of this new Myers type "H" Series Ejecto permits use of the same pump and tank assembly for both shallow and deep well installation. Heretofore an entirely different complete system had to be stocked for deep and shallow wells but this new unit eliminates this need. Simply by attaching the proper ejector to the pump and tank assembly it becomes either a deep or shallow well system. The parts for making these changes are boxed separately and properly labeled, thus making stocking extremely simple.

Two Models of G.E. Irons

Two models of electric irons will be manufactured by the General Electric Company in its Ontario, California, plant under recent OPA and WPB rulings and directive orders.



Both models will be of the automatic type. The majority of the 421,000 irons, which was the quota granted G-E, will carry a retail price of $8.55, including tax. The other model will retail at $5.70, including tax. These prices are comparable to those of prewar models. The new irons will be similar to the prewar irons manufactured by G-E with only minor modifications in external finish.

It is expected that delivery of the irons will begin in September. General Electric's regular distributors will receive the first shipment, and retailers will be able to offer the irons for sale to the general public shortly afterward. Quotas have been established for each geographical area within the United States, based on the distribution of iron sales of 1940, adjusted to compensate for population shifts since that year.

Safe Industrial Fluorescent

A new industrial and utility lighting fixture for use with two 40-watt, three 40-watt, and two 100-watt fluorescent lamps has just been announced. The new Maze-Lite is built of heavy-gauge steel throughout, made possible by the War Production Board's recent release of heavy-gauge steel for lighting purposes.

Made entirely with dies, it is strong and rigid, and is durably finished. Its reflector is available with either porcelain enamel

from the MOST COMPLETE lin
of Cable Taps

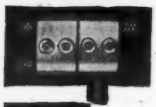
Now you can select from a really *complete* line of standard and special taps. Every one carefully designed and manufactured.

Parallel and 90° taps — and combinations — in the widest variety. For conductor sizes up to 1,000,000 CM.

Gutter Tap with Bakelite Cover. Insulating covers can be furnished for all types of Penn-Union cable taps.

2-way Gutter Tap. Main and branch sizes 8 to 1,000,000.

Two Separate Parallel Taps to a continuous main conductor.



Combination Cable Taps; one branch parallel to main, and one at 90°.

Hinged Clamp of Penn-Union Type HFM makes installation easy. Multi-slit tapered sleeve assures permanent grip on branch.

Positive Equalized Pressure on main and branch, with Penn-Union Type SM. Tightening torque is accurate measure of the clamping force.

L. MORRIS LANDERS
309 Walton Building Atlanta, Ga.

WALTER J. HUEMMER
Dallas Transfer & Terminal
Warehouse Building Dallas, Texas

PENN-UNION ELECTRIC CORPORATION
ERIE, PA.

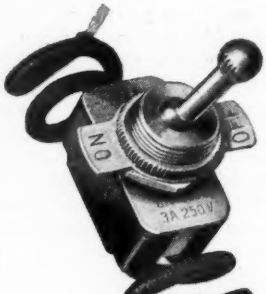
PENN-UNION
Conductor Fittings

(1200°) surface, or with synthetic enamel (300°) surface. Reflector-ends are rounded to eliminate sharp corners for maximum safety conditions.

The Maze-Lite can be had with hot-cathode or cold-cathode auxiliaries, and its reflector provides high light utilization with normal lamp shielding. It is immediately available. For further details write to The Edwin F. Guth Co., 2615 Washington Ave., St. Louis 3, Mo.

New Toggle Switch

A new small, thin toggle switch has been developed by the McGill Manufacturing Company, Inc., of Valparaiso, Indiana, that is expected to find wide acceptance, especially among the small tool, appliance and office machine people. This new switch is also very practical for the individual control of lights in Pullman cars, passenger cars and busses, interior lights in autos, airplane and trailer lights, camera projectors, wall, floor and table lamps.



Its construction is dust and vibration proof and its body is only 1" long, ½" wide and ½" thick. It will fit into the shallowest of openings. This switch is made in three types. No. 25 single pole, rated 6 amp. "T" 125 volts; 3 amp. 250 volts. No. 27, three way, rated 6 amp., 125 volts. No. 28 two-circuit, no off position, rated 6 amp. 125 volts. All types furnished with wire leads or solder lugs. The illustration is actual size. This McGill switch is approved by Underwriters Laboratories.

New Insulating Process

A new process for the application and treatment of insulating varnish to armatures and stators has been announced by The Sterling Varnish Co., Haysville, Pa., and Manchester, England.

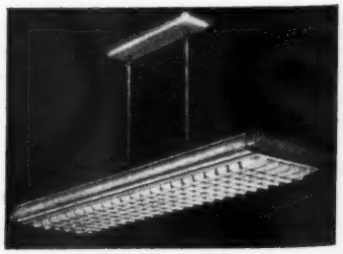
Named the Zanderoll Process after its inventor, Don F. Alexander, the method provides amazing cost-saving and product-improvement advantages according to the Sterling engineers. Major benefits stated are: 50% to 90% reduction in treating time over previous methods, elimination of varnish drainage immediately on removal from varnish bath, conserving varnish, saving oven clean-up and preventing fire hazards; elimination of necessity for cleaning shafts; perfect penetration and filling of all windings including slot sections; thorough drying throughout; uniformity of distribution permits balancing armatures before varnish treatment; flexibility of stator lead wires maintained. The Zanderoll Process does not necessarily require any change in the type of varnish previously used.

Armature and stator engineers are invited to bring their product to The Sterling Varnish Co., Haysville, Pa., for a demonstration Zanderoll treatment in the pilot plant now in operation.

New Fluorescent Fixture

The Spero Electric Corporation announces a newly designed fluorescent fixture, ideal for any commercial installation, combining highest efficiency, modern design, minimum glare and low maintenance costs. All the elements of correct engineering have been incorporated in this modern unit. The light from the four 40-watt tubes is shielded by evenly spaced egg-crate louvres, minimizing glare. Reflecting surfaces, finished in "Plastox" white (88% reflection factor) are so arranged as to eliminate "trapped light" resulting in high intensity with low surface brightness. Plastic side panels shield end tubes and contribute to smart appearance.

Made for stem or flush mounting. For stem mounting, unit is equipped with an attractive ceiling canopy. Louvres are hinged



for easy and quick maintenance. This new unit is designated Spero LVR-448, and is available with Spero Insta-Lite — providing instantaneous lighting and still further reducing maintenance costs. Descriptive bulletin is available by writing The Spero Electric Corporation, 18220 Lanken Ave., Cleveland, Ohio.

7-Day Time Clock

A significant development in time switches — one which has proved its worth under today's exacting conditions—is the Paragon 700 Series 7-day calendar, dial time switch. This unit has demonstrated its worth for timing automatic heat, ventilating, lighting, pumping or flushing operations.

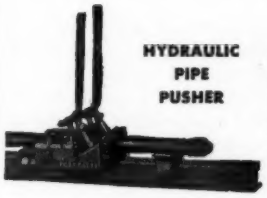
These switches are equipped with 6-inch calendar dials which make one complete revolution every seven days. Dial trippers can be independently set for different daily "on" and "off" schedules. Settings can be made in advance for an entire week. Any day or day's operations may be omitted entirely on a pre-set program.

Each day of week clearly separated from other days; graduated into hours and half hours; day and night distinctly separated. Operations from "on" to "off" or from "off" to "on" can be set as close as three hours apart and can be separately adjusted throughout each 24-hour day in the week.

Engineering bulletin available from Paragon Electric Co., Old Colony Building, Chicago 5, Ill.

Distribution Transformers

An expanded line of distribution transformers designed to withstand complete submersion in



HYDRAULIC PIPE PUSHER

Use GREENLEE Pipe Pushers to install pipe for gas, electricity, water, sewers and telephone cable under ground. Eliminate cost of extensive trenching. And there's no tearing up of pavements and lawns, no backfilling, no repaving. A portable tool, easy to carry and set up, GREENLEE Pushers develop up to 75 tons of pressure, have 6 speeds for varying soil conditions.

IF you ever tried to bend pipe by slamming it into a hole in the wall and then pounding it with a sledge hammer—listen to what Mr. Harry Newmark of Morris Newmark & Bros., electrical contractors, Philadelphia, has to say:

"This three-inch heavy wall electric conduit required exactly a one-inch offset. The job was done in 5 minutes flat . . . and could be duplicated on other conduits! With GREENLEES on the job, the savings in labor, time and money are incalculable."

One-man operated . . . easily carried to the job and set up, GREENLEE Benders eliminate manufactured bends and fittings, make smooth, accurate bends on pipe up to 4½", rigid and thin wall conduit, tubing or bus bars. *Whatever* your bending job, use a GREENLEE to do it better, faster!

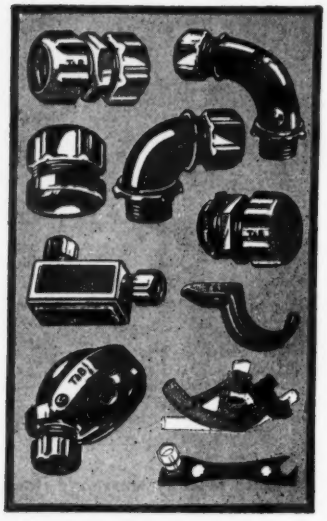
Write for free copy of Catalog 33E. Contains complete facts on all GREENLEE tools for electrical workers. Greenlee Tool Co., Division of Greenlee Bros. & Co., 1770 Columbia Avenue, Rockford, Illinois.

Other GREENLEE time-saving tools for electrical work:
CABLE PULLERS
JOIST BORERS
HAND BENDERS
RADIO CHASSIS PUNCHES
KNOCKOUT TOOLS

Get Ready with Greenlee!
REGISTERED TOOLS
GREENLEE
FOR THE CRAFTSMAN

For Reconversion Wiring

T&B FITTINGS FOR EMT



Order your EMT fittings from the complete T&B Line—Couplings, Connectors, straight and angle, Entrance Caps and Ells. Also T&B Benders, Wrench and Reamer Tools and Hickeys for EMT. All you need to meet every EMT requirement.

All made on the well known T&B ribbed gland type principle which permits tightening with either wrench OR pliers.

Approved by the Underwriters Laboratories on rain-tight and pull-out tests.

Sold only through the service organizations of T&B Electrical Wholesalers.

Get in touch with them or any of our convenient offices today for EMT Bulletin s-14.

The Thomas & Betts Co., Incorporated
518 Masonic Temple Bldg.
New Orleans 12, La.

The Thomas & Betts Co., Incorporated
P. O. Box 2372
Charlotte, North Carolina

The Thomas & Betts Co., incorporated
Room 423
Citizens & Southern Bldg.
Atlanta 3, Ga.

T&B
THE THOMAS & BETTS CO.
INCORPORATED
manufacturers of electrical fittings since 1899
ELIZABETH, N. NEW JERSEY

water are completely described in a new bulletin offered by the Allis-Chalmers Manufacturing Co.

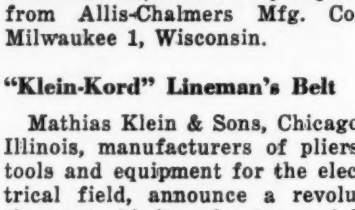
Built for use in underground vaults and similar locations, the subway distribution transformers operate under these conditions without damage to themselves or interruption to service. They are available in standard sizes — 10 to 200 kva — and standard voltages. Specifications include standard NEMA accessories and construction.

Shaped rectangularly, the tanks are fabricated from heavy gauge, rust-resistant copper-bearing steel plates. All joints are electrically welded to insure absolute oil and water tightness. Tanks are designed with recessed bottoms to protect against rough handling and corrosion. For medium and larger sizes of subway transformers, the tanks are provided with radiating steel tubes for cooling.

Complete descriptions of the units are contained in new bulletin No. B6333, available by request from Allis-Chalmers Mfg. Co., Milwaukee 1, Wisconsin.

"Klein-Kord" Lineman's Belt

Mathias Klein & Sons, Chicago, Illinois, manufacturers of pliers, tools and equipment for the electrical field, announce a revolutionary tool belt made of a specially developed material called Klein-Kord.



Klein-Kord is a newly developed material consisting of multi-ply, specially woven long staple cotton laid in rubber and vulcanized. According to this manufacturer, Klein-Kord is water-proof, has a tensile strength many times that demanded in actual service, and possesses absolute uniform quality, great strength, and flexibility.

In Klein-Kord, the cross cords are extra strength, which makes it possible to punch holes in the belt strap without danger of ripping under strain. This permits the use of a positive action, tongue-type buckle and does away with the necessity of using the dangerous friction-type buckle.

Belt construction: A two-inch wide body strap is riveted to the 4-inch wide belt forming four tool loops. A sturdy 4½-inch canvas lining assures greater support and provides safety insulation by covering the rivets. Body moisture is also absorbed by the canvas lining thus increasing the comfort of the lineman. "D" rings of solid steel drop forgings are mounted in steel safety clips which are riveted through the main belt. The body strap in turn passes through the "D" ring to provide additional safety.

Other new Klein-Kord products include climber straps and pads.

E-M Voltage Regulator

A new, improved voltage regulator, the E-M Synchrostat, is announced by the Electric Machinery Mfg. Co., Minneapolis. Designed for use with a-c electric generators using direct-connected, belted or motor-driven exciters, 50-60 cycles standard, the regulator consists of a basic, metal-enclosed unit adaptable for regular generator switchboard mounting, and for mounting-on-top-of-the-generator in "packaged" power units.

Voltage regulation of the Synchrostat is plus or minus 2%; the regulator quickly responds to load changes to restore generator voltage to normal. The regulator is of the synchronous-contact type; vibrating tungsten contacts of regulator relay operate every half cycle of the a-c wave (120 times a second for 60 cycles) to insert and to remove a resistance in the shunt field circuit of the generator exciter. Regulating action is obtained by the relative time interval the relay contacts are open.

New Infra-Red Lamp

A new 375 watt reflector type infra-red heat lamp has been added to the Birdseye line, the Wabash Appliance Corporation announces.

This higher-wattage Birdseye RE-40 is designed to produce higher drying temperatures not possible with available 250 watt sizes. With the addition of the 375 watt lamp, the Birdseye RE-40 reflector type infra-red heat lamp is now obtainable in 125, 250 and 375 watt sizes for flexible control of temperatures.

Heat-proof Superlok base, more efficient and durable ceramic heat reflector disc, the famed Wabash tungsten "M-Filament," and built-in reflector are standard features of the new 375 watt Birdseye infra-red lamp. For further information, write Wabash Appliance Corporation, 335 Carroll Street, Brooklyn 31, N. Y.

New Electrical Books

Industrial Electronic Control

By W. D. Cockrell. Published by McGraw-Hill Book Co., Inc., 330 West 42nd Street, New York 18, N. Y. 247 pages, 175 illustrations. Price, $2.50.

For the man selling, installing, and servicing electronic equipment, this book provides a working knowledge of electronic control. In a practical, non-mathematical treatment, it explains various types of electron tubes, fundamental circuit components, basic electronic circuits, and the analysis of the complicated circuits used in modern industrial practice. Designed to serve as a guide to the understanding of electronic control circuits for industrial uses, it presents this material in a practical rather than a theoretical treatment.

Electric Circuits and Fields

By Harold Pender and S. Reid Warren, Jr. Published by McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y. Price, $4.00.

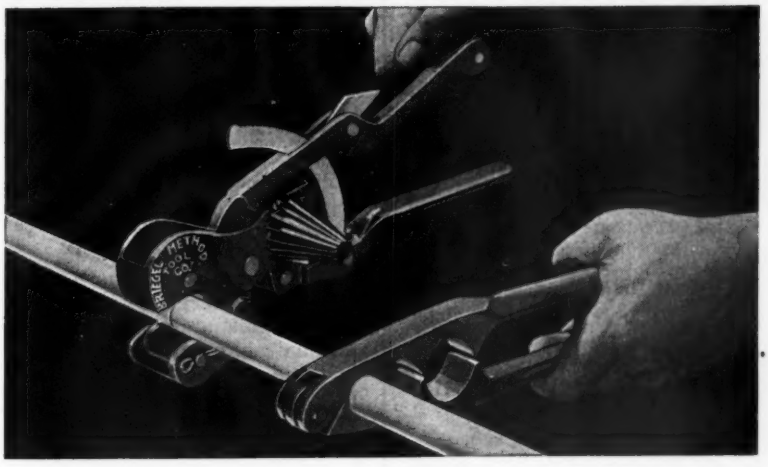
This book gives quick, accurate solutions to electrical engineering problems. It presents the fundamental facts and theories of electrical circuits and the detailed theory of electric and magnetic fields. Written entirely from the engineering point of view, this practical book includes descriptions of the more important effects commonly described as elec-

It's easy to install a
CHROMALOX **HEATFLO** UNIT
THE REPLACEMENT UNIT FOR ALL ELECTRIC RANGES

Fits all ranges with clip-on adaptor rings –
Cuts inventories –
Cuts delays –
Cooks with Chromalox efficiency –
Makes happy customers.

Chromalox Super-Speed range units and parts available without priority—under WPB Order L-65.

EDWIN L. WIEGAND CO. 7600 Thomas Blvd., Pittsburgh 8, Pa.
ATLANTA, Ga.—C. B. Rogers, 1000 Peachtree St. DALLAS, Texas—L. R. Ward, 403 Southland Bldg. Annex. RALEIGH, N. C.—W. R. Phillips.



AUTOMATIC FEED TUBE CUTTER

For ½" to 1" E. M. T. . . .

Cut E. M. T. the quick easy way! Only One Setting. Just clamp the Briegel No. 100 Tube Cutter on the E. M. T. and give it a few turns. No further adjustments necessary. Constant Spring Tension does the rest—gives you a clean cut from the original setting—does away with tube distortion and gives longer cutter life. Then too, the Handy Reamer is attached to it's side. A couple of twists removes any slight inside burr.

HANDY TUBE HOLDER . . .

Also shown is the Briegel Tube Holder that accommodates all sizes of E. M. T. from ½" to 1" without damage to outer coatings.

DISTRIBUTED BY
The M. B. Austin Co., Chicago, Ill.
Clayton Mark & Co., Evanston, Ill.
Clifton Conduit Co., Jersey Cy., N. J.
Gen. Electric Co., Bridgeport, Conn.
The Steeldurt Co., Youngstown, Ohio
Enameled Metals, Pittsburgh, Penn.
National Enameling & Mfg. Co., Pittsburgh, Pa.
Triangle Conduit & Cable Co., New Brunswick, N. J.

Prompt Deliveries on Properly Rated Orders

BM BRIEGEL METHOD TOOL CO. • Galva, Ill.

POULTRY HOUSE TIME CONTROLS

Model PS

Model 301

Mr. "Tops," the Paragon symbol of top quality

Paragon Poultry House Time Controls, **Model PS**, are designed for both morning and evening lighting, with dimming period for roosting. The Paragon **Model 301** is designed essentially for morning lighting only. It is a heavy duty, industrial type time switch adaptable to poultry house lighting. It is truly a superior instrument of high quality and low price. All Models are synchronous motor operated and available on AA5 or better.

Send for
AUTHORITATIVE BULLETIN

Paragon has prepared a 4-page, 2 color bulletin containing authoritative information relative to poultry house lighting control . . . location of lights, selection of light control switches, etc. It summarizes the recommendations of leading poultry authorities and gives complete data regarding the wide range of Paragon poultry house time switches.

PARAGON ELECTRIC COMPANY
713 Old Colony Bldg.
Chicago 5, Illinois

Paragon *Chicago*
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905

tric and magnetic phenomena.

The book is divided into two parts, the first nine chapters being devoted to a detailed analysis of electric circuits. The second part of the book discusses experimental phenomena and the theories of the electric and magnetic field, together with a discussion of Maxwell's equations, some of the fundamental aspects of spatial vectors, and an analysis of problems in the field of electronics.

In addition, the book includes an appendix with special information on the solution of linear differential equations, vector analysis, electrostatic potential in the neighborhood of very long electrically charged cylinders, and the vector potential as the basic quantity for the correlation of magnetic phenomena.

Basic Mathematics For Engineers

By Paul G. Andres, Hugh J. Miser, and Haim Reingold. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y. 726 pages, illustrated. Price, $4.00.

The purpose of this publication is to relate mathematics as far as possible to its engineering applications. The book covers the subjects of algebra, trigonometry, vectors, analytic geometry, elements of differential and integral calculus. It is intended to be used with students who have had at least two years of high school mathematics but it is completely self-contained except that it relies upon the usual simple facts from arithmetic and geometry. The text is especially complete and self-explanatory fitting the book admirably for review work or home study.

Construction Services Price Control Clarified

(Continued from page 30)

see a copy of the regulation of this OPA trade bulletin and you must have one at hand at your principal place of business and each branch office. This need not be done for any Government agency.

Certificate of Compliance

At the time of final settlement of a job, you must give your customer, if he asks for it, a statement that you charged not more than the ceiling price.

Sales Engineering

By Bernard Lester. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Price, $2.00.

Many forward looking companies have already begun the serious job of sales training, and a good many, too, are discovering Mr. Lester's book on "Sales Engineering." The book tells how to sell equipment and services which require engineering skill in their selection, application, and use. It is divided into three general sections: the field of sales engineering, the work of the sales engineer in selling, and the training and development of the sales engineer.

Package Kitchens In Postwar Plans

(Continued from page 19)

—including the chance for the customer to operate the appliances on the showroom floor, as well as to see them demonstrated in 'home' surroundings, offered new merchandising opportunities to these types of merchants."

HELWIG SPEER
Carbon Products

Multiflex Brushes
Give
Better Commutation
Longer Life
Less Commutator Wear
That Extra Demand Required
Better All Around Performance

HELWIG COMPANY
2544 NORTH 30th ST., MILWAUKEE 10, WIS.
Southern Offices:
724 North Hudson, Oklahoma City, Oklahoma
Telephone: 3-3409
2005 McKinney Avenue, Houston 3, Texas
Telephone: Preston 1610

He said, "We plan to assist with the installation of complete 'package' displays of kitchen equipment in leading stores across the nation because these stores will become experts in the sale and installation of appliances in 'complete room' groups.

"Electric range sales will result from complete kitchen displays because the range's strongest selling point — cleanliness — is made dramatic here where gleaming white cabinets are displayed over and around it," he said.

"Dealers will find many factors favorable to electric range sales in postwar which have resulted from wartime conditions," Mr. Conklin said, citing that 7,000,000 women who had been employed in industry during the war would have a greater appreciation of the completely automatic control features, as well as "clock-measured" heat of the electric range. "These women will be much more aware of mechanical functions than previously, and they will understand the value of controlled heat.

"In addition to complete kitchens to aid dealers in sales of 'packages' or single appliances, adequate wiring promotion will hold a more important place in postwar sales plans," Mr. Conklin said, explaining that a great number of America's homes are not adequately wired at present for many of the new appliances. The entire electrical industry is now planning to attack this problem nationally; while locally, utility companies and wiring contractors will foster active campaigns to bring about better home wiring.

"We know what the American home wants, and we are planning to equip dealers to give it to them; we know what dealers want in the way of display and merchandising aids, and we will be ready with those aids; we are making our plans not only for one or two years after the war, but for the period that lies beyond that, two, five and ten years later, when the results of sound planning will make themselves felt."

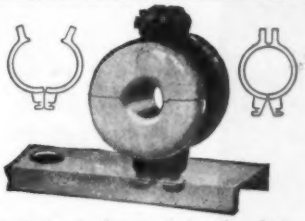
Customer Confidence Gained with Service

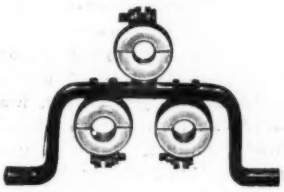
(Continued from page 15)

the inevitable letdown that jars the dealer, jobber and manufacturer. When the appliances reach the point where breakdowns begin to occur as a matter of course, there is

"EFFICIENCY" DEVICES FOR CONDUIT AND CABLE SUSPENSION

EFFICIENCY NESTED CONDUCTOR RACKS





Nested Conductor Racks available for Cable diameters from 5/16" to 2-3/8".

● Simplicity is keynoted in the design of the EFFICIENCY bushing rack. Note that a single bolt supports the bushing and at the same time clamps the bushing support to the rack. Each fitting is a separate unit . . . permits the installation of each cable independently.
The EFFICIENCY rack is constructed of standard rolled steel channel—sizes according to size of bushings and number of mountings for each rack. Bushing supports are malleable iron. For A.C. service a brass half is furnished. Bushings are glazed porcelain, extra large and heavy.

Complete information on all EFFICIENCY Electrical Devices is available. Write today for your copy of Catalog No. 38B.

Efficiency ELECTRIC AND MANUFACTURING CO.

For the Best in Mechanical, Electrical, Thermal, and Chemical Protection—

Almost any kind of varnish will probably work — for a while. But, for the best service from your equipment, you need a varnish formulated to EXACTLY fit the operating conditions of your product. There's a Pedigree electrical insulating varnish that will give you longer, more dependable service in the field at lower cost.

Write today for the free Pedigree varnish catalog — or submit your problem to a Pedigree varnish specialist.

The PRODUCT WITH A PEDIGREE — THE P. D. GEORGE CO.

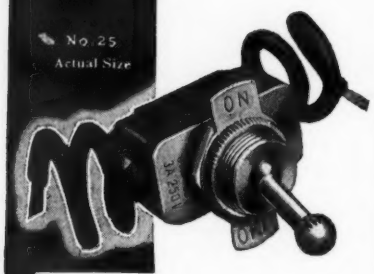
Select the Pedigree VARNISH Ideally Suited to Your Job.

The P. D. GEORGE CO.
5200 N. SECOND ST., ST. LOUIS, MO.

Call In the Pedigree Varnish Man Nearest You.

Vibration and Dust PROOF

No. 25 Actual Size



McGILL
Toggle Switches

Here is a new addition to the McGILL line of dependable switches . . . the McGILL Toggle Switch, Nos. 25, 27 and 28 Series. This small, practical, thin, multiple switch is both vibration and dust proof. With a body only 1" long, ½" wide and ½" thick, it fits into the shallowest of places. Approved by the Underwriters' Laboratories, it is ideal for the individual control of small tools, fractional horsepower motors, industrial and office machines, appliances, motion picture projectors, floor and table lamps, airplane and trailer lights, lights in Pullman cars, passenger cars and busses.

They are made in three types. No. 25 single pole rated 6 amp. "T" 125 volts, 3 amp. 250 volts. No. 27, three way, rated 6 amp. 125 volts. No. 28 two-circuit, no off position, rated 6 amp. 125 volts. All types furnished with wire leads or solder lugs.

McGILL Toggle Switches are easily installed and built for long life. See your dealer, or write for further information.

McGILL
MANUFACTURING
COMPANY, INC.
Electrical Division
VALPARAISO, INDIANA

bound to be dissatisfaction when the distributors and dealers who have put their emphasis on sales rather than service are faced with vast numbers of these customers demanding that their appliances be repaired. And they always want them repaired quickly, too—none of this 'back to the factory' business, if you please. The system builds pitfalls that proper planning now could eliminate after the war.

"Where equipment is out and there is no adequate servicing, the customer is more aware than ever of the nationally recognized brands. With proper planning of distribution, the dealer, jobber and manufacturer can all enjoy the flood of postwar business. It is a golden opportunity that shouldn't be neglected. Sommers-Brown, by making arrangements now to serve the public both as a dealer and jobber, by maintaining an efficient repair department, is going to get its share of business. When peace comes, Sommers-Brown will have a firm basis for sales and service."

While many appliance dealers are preparing to put emphasis on refrigerators in the postwar period, Rouleaux foresees a tremendous boom in washing machines—a boom that he believes will outstrip that of refrigerators in the South.

"Because of its cheap labor, the South before the war had not been an especially fertile market for washing mahines," Rouleaux explains. "Most people either had their washing done by hand at home or they sent it to the laundry. When the cheap labor went into better paying war work and the laundries became swamped and started turning down wash, many people right then and there made up their minds to buy a washing machine whenever possible. They are tired of uncertainty and delay and are convinced that a washing machine is one of the best investments they can make.

"There are great opportunities in other lines, too, and Sommers-Brown is making its plans accordingly."

Installation Customers Now Maintenance Accounts

(*Continued from page 13*)

Although lighting-system servicing represents a large part of the concern's maintenance volume, its lamp replacement business is small. This is due to the fact that most of its customers contract for their lamp needs directly with wholesale lamp suppliers.

In pre-war days, LaVigne Electric conducted still another "extra volume" department—special lighting. This covered the furnishing of lighting equipment, as a temporary installation, at locations where there was insufficient lighting or none at all.

The purposes for which this equipment was employed included the illumination of open air exhibits, such as carnivals and tent shows, large out-of-door parties and church fairs, and also special lighting for theatre, restaurant or other "openings". The equipment used consisted to a large extent of high wattage lamps, reflectors, "spots" and the wiring needed for "bringing in the juice".

Naturally, there is at the present time little demand for this type of service. However, the equipment still is used to a limited degree for the lighting of theatre or open air War Bond Rallies.

La Vigne Electric operates from a concrete-block building located at 176 Northeast 20th Street. Consisting of general and private offices, estimating room, shop and ware-

O.Z. "all-purpose" solderless lugs

To meet your requirements for a combination lug for cables ranging from No. 8 sol. to 1000 Mcm.

The feature of this Type "XL" Combination Lug is the adjustable pressure plate which can be tightened or loosened to accommodate a wide range of cable sizes. The body is cast copper alloy; socket set screws and wrench are furnished.

O.Z. also manufactures a line of Solderless Lug for smaller and larger wire sizes. These are built to individual specifications—engineered to fit the job.

Write on your letterhead for the new O.Z. catalog containing complete information and prices on Conduit Fittings • Cable Terminators • Junction Boxes • Solderless Connectors • Power Connectors • Grounding Devices.

O.Z. ELECTRICAL MFG. CO.
242 BOND STREET · BROOKLYN, 2 N.Y.

Represented by
M. L. WHITMAN . . . . . 313 Bona Allen Bldg., Atlanta 3, Ga.
W. J. KELLER . . . . . 304 Natchez Bldg., New Orleans 12, La.
F. O. OSTERMUELLER . . . . . 6935 Meadow Lake Ave., Dallas 14, Texas

housing facilities, the structure covers a ground area of approximately 6,000 sq. ft. A public address system makes communication between the office and the shop or the warehouse an easy matter.

The firm's shop is well provided with power tools. Among them are a lathe with a 9-in. swing and 6-ft. bed, a drill press, a portable power hacksaw, a bench grinder and a hydraulic bender handling conduit up to 6 in. The equipment also includes arc welding apparatus.

In common with electrical contractors generally, LaVigne Electric has handled its share of war-purpose jobs. Among them was a large installation of special electrical equipment, such as explosion-proof switches, at a "military" base. However, as Francis LaVigne points out, the firm's maintenance department is a steady year-in-year-out volume builder. And right now, it has the advantage of requiring minimum in the way of critical and hard-to-get materials.

Postwar Trends In Retail Selling

(*Continued from page 11*)

multitude of models and a variety of brand names.

In addition, I think we are going to see an increased emphasis on more attractive displays of appliances, and the revival of a specialized consumer approach in both inside and outside selling. In other words, I believe this "dry" period again has enabled us, in retrospect, to visualize a far greater consumer interest and receptiveness to electric appiances than, at times, we have made it convenient for them to show.

We have frequently approached their problem and their need from the angle of our own selfish benefit. I know this has happened productwise even though it was not malicious intent. Take the electric refrigerator for example—for years we made size the determining factor of price range. As we went up in size from the 4 cubic foot model we added features so that to get a 7, 8, or 9 cubic foot box, you had to be technically of the elite. Not until a relatively few years ago did one of our contemporaries shock us into the realization, that the poor wash woman with seven children on her back needed a large size far more than the "gal" with the fat pocketbook. This gave birth to the so-called stripped 6 and 8

HELPING ELECTRICITY SERVE AMERICA BETTER!

BETTER WIRE JOINTS

with IDEAL "WIRE-NUTS"
(Solderless, Tapeless Wire Connectors)

In the electrical wiring of factories, homes, public buildings, etc., leading electrical contractors are using millions of IDEAL "Wire-nuts" because they make wire joints that are neater, safer, quicker, better electrically—stronger mechanically. IMMEDIATELY AVAILABLE . . because no critical material used. Approved by Underwriters' Laboratories, Inc.

Other IDEAL WIRING DEVICES
Today and Tomorrow thousands of new wiring jobs in Industrial Plants and in construction will be facilitated with IDEAL Wiring Devices:—

E-Z Wire Strippers
Lugs, Solder and Solderless
Fish Tape Reels and Pullers
Joist Boring Machine

SOLD THROUGH JOBBERS
PROMPT DELIVERY

IDEAL Sycamore
IDEAL COMMUTATOR DRESSER CO.
1017 Park Ave., Sycamore, Ill.
Sales Offices in all Principal Cities

ONLY Vaculator
offers an "INSURANCE POLICY" guaranteeing THE WORLD'S FINEST CUP OF COFFEE!

At your Jobber's NOW!

Backed by the GREATEST AD CAMPAIGN ever put behind any coffee maker!

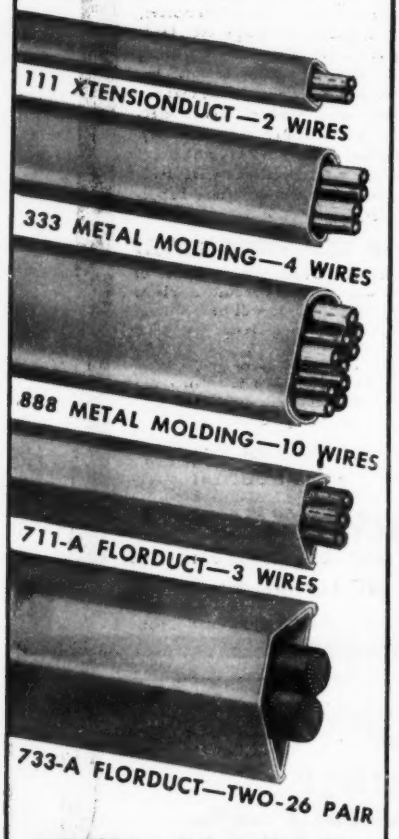
8 CUP . . . $2.95
4 cup (with cover) $2.95

★
Made with PYREX Brand Glass

25 MAGAZINES! OVER 46,000,000 MONTHLY CIRCULATION! INCLUDING: Liberty • Life • Cosmopolitan • Saturday Evening Post • Ladies' Home Journal • Women's Home Companion • American • Good Housekeeping • American Home • Country Gentleman

HILL-SHAW CO., 311 N. Desplaines St., Chicago 6, Ill.

...for Immediate and Post War Circuits



THERE is no wiring problem when "Metal Molding" surface raceways are used. The wires are laid in the base; the capping snaps on. It's as simple as that to eliminate fishing and tearing up walls or floors to install additional circuits.

"Metal Molding" is manufactured in three sizes; 111 "Xtensionduct," 333 "Metal Molding" and 888 "Metal Molding." "Florduct" for surface wiring on floors comes in two sizes. 711-A "Florduct" and 733-A "Florduct." All five raceways are interconnectible with each other. These neat appearing surface raceways have a complete line of fittings having two or three different sizes of twistouts to take the various sizes of moldings.

All have a neutral gray finish. For a quick surface wiring job, use "Metal Molding" and "Florduct."

Listed and approved by Underwriters' Laboratories, Inc.

Write for catalog and handbook.

National Electric Products Corporation

Pittsburgh, Pa.

cubic foot sizes at a price.

In other words, we had not taken the consumer's problem and the consumer's need into serious consideration. I won't say our motive was profit selfishness but it does show that we were not seriously attempting to meet the real market need. So, as manufacturers, I am sure we have not always made it convenient for the public to show their true interest and I can well imagine that if distributors and retailers really studied long enough they might find similar examples.

Furthermore, I am not sure that our over-all approach has been too favorable. If we go back over the past ten years and analyse our advertising and publicity, I am afraid we would find that a large portion of it was defensive rather than offensive. Our approach was too frequently in trying to defend our particular product, our particular method of doing business, or in trying to impress the public with our individual difficulties and problems. Now, I know we were probably justified and that we had and will continue to have troubles, but unfortunately the general public isn't very much interested.

Come postwar, I believe it even more important that we be on the offensive rather than the defensive. Certainly in our war effort we have earned an increased right, heritage, and privilege to do so. In addition, I think we are entering an era when the public expects it of us, yes, even may demand it. I have always heard that the best defense is a good offense, so shouldn't we:

(1) Take a sincere and broader interest in trying to anticipate as well as meet the consumer's need—productive—pricewise—and servicewise.

(2) State the merits of our business plainly and offensively but in terms of consumer interest and benefit.

Many of us may say, "Well, isn't that what we have been doing?" However, before we lapse into complete self-satisfaction on the question, maybe it would be well to take another good look. We are all out to win the public's favor and merit a portion of its spending dollar. To do this we must serve it well and make it like us. I am positive it likes our wares and enjoys using them. Our problem is to make it convenient for them to use more and make them still happier.

Nailing it right down, we in the electric appliance business will be the "stag line" at the "National Ball" vying with many others for the favor of the popular "belles." As we "cut in" we are not interested solely in a "once-around-the-hall" courtesy performance but are hopeful that our technique and execution will merit a return engagement with satisfaction and happiness assured. What better assurance is there for their satisfaction and happiness than teaching the "Belles of the National Ball" the modern "steps" of "Living Electrically"?

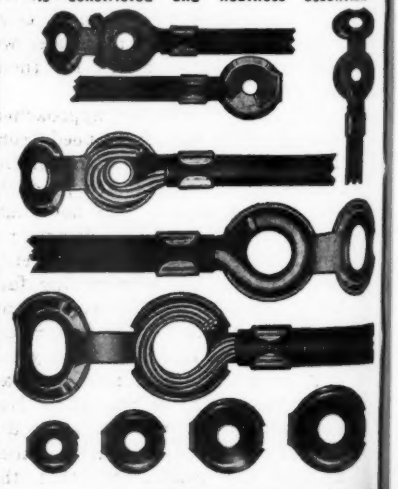
Electrical Industry Pioneer Passes

(Continued from page 31)

division to the combination. As president of the new firm, Edison General Electric Appliance Co., Inc., which used the word "Hotpoint" to designate its products—Mr. Hughes became world famous as the maker of "Hotpoint" products.

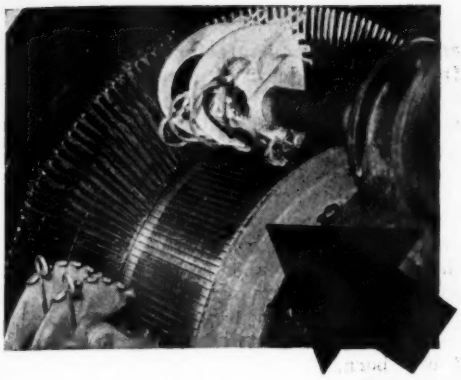
Always a leader, a salesman, a human force among workers, Mr. Hughes served as president of Edison General Electric until 1940,

Vibration proof solderless connections are made in panel boxes where space allotment is constricted and neatness essential.



WRITE FOR BULLETIN 8-DF

K&H KRUEGER & HUDEPOHL
Solderless Terminal Lugs and Connectors
WIRE AT THIRD ST. CINCINNATI, OHIO



How to get more SERVICE from motors

Carbonization of lubricating oils that seep into the interstices of commutator segments is largely responsible for burn-outs under overload operations. Then too, shrinkage of mica segments through aging of the binder opens capillary cracks which encourage oil seepage and absorption.

An application of one of DOLPH'S Oilproof Enamels will prevent oil seepage. Why not write for full details?

Dolph's

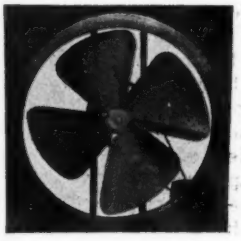
JOHN C. DOLPH COMPANY

Insulating Varnish Specialists

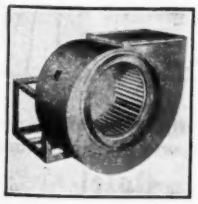
166 Emmet Street Newark, New Jersey

THE "Fresh-Air MAKER"

provides fully the comfort and ventilation so essential in army barracks, mess halls, hospitals, headquarters, theaters and other military buildings. Its fine design and sound construction meet the specifications drawn for army fans and it is particularly adaptable to the various types of installations found in army buildings.



HY-DUTY BLOWERS



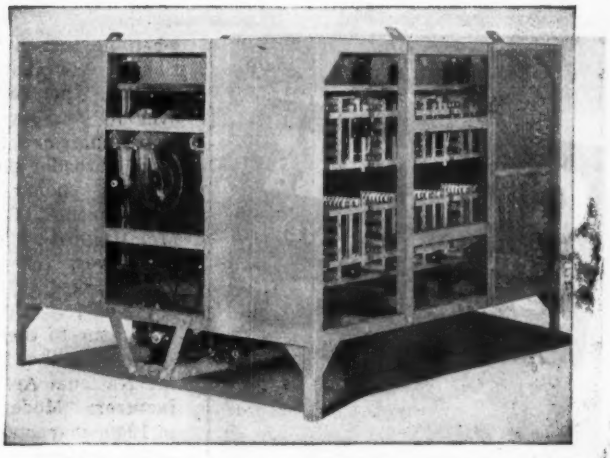
Single Inlet—Double Inlet. 400 CFM to 12,500 CFM.

Single Inlet Blower illustrated at left is particularly adapted for ventilation of mess halls in military establishments.

BLOWER DIVISION

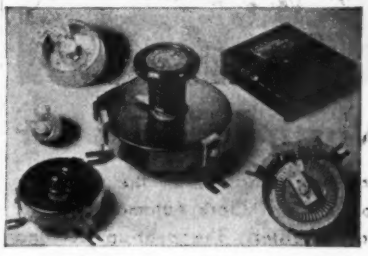
SCHWITZER-CUMMINS COMPANY

1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.



ASSEMBLED RHEOSTATS

HERE IS a Ward Leonard assembled rheostat designed for production testing of grid-controlled rectifier tubes. It consists of five face plates with each face plate composed of two rheostats. Each rheostat will drop from 0 to 375 volts at any current between 15 and 0.15 amperes. The rheostats are mechanically connected but electrically independent. They may be connected in series to give a maximum drop of 3750 volts or in parallel to give a maximum current of 150 amperes. The assembly is tested at 10,000 volts to ground and 2,000 volts between rheostats. Whenever you have an electric control problem, Ward Leonard engineers are at your service.



ARMY E NAVY

The Ward Leonard line of rheostats include steel plate types, porcelain ring types and ribohm face plate types. These rheostats provide control for the minute current requirements of the laboratory and the heaviest current demands in industrial applications.

Send for rheostat bulletins of interest to you.

WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control (WL) *devices since 1892.*

WARD LEONARD ELECTRIC COMPANY

37 SOUTH STREET, MT. VERNON, NEW YORK

when he turned the actual operation of the vast plants and far-reaching marketing organization over to younger men and became board chairman to direct the company's broader policies.

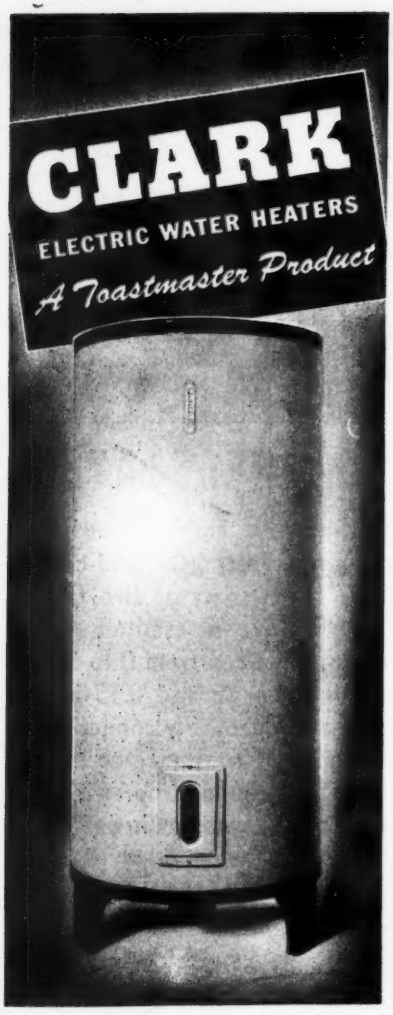
Many honors befitting the achievements of his life came to Mr. Hughes. "My engineers, my executives, for many years they have worked to develop the appliances—I felt that the award should have gone to them." These words, spoken at the time of award of the National Association of Manufacturers "Modern Pioneer" award in 1940, characterize the modest attitude maintained by Mr. Hughes toward recognition. Later in 1940, he was named to receive the McGraw Award, given to the man adjudged as contributing the most to his industry. His comment was, "I don't deserve it."

Mr. Hughes' life was as many sided and his interests as varied as those of the millions of Americans who live better today because of his pioneering, his dreaming, his work, and his foresight. Life today is freer, easier, better for millions because of bitter nights spent waiting for local trains to carry his message—the words of electricity's wonders—words that even now are easily forgotten because his job was thoroughly done.

But George Alexander Hughes was not burdened with a "mission"—his predominant side was his sense of fun, of broad humanity. No gathering of "old timers" of the electrical industry takes place without the name of George Hughes being mentioned — and stories are told, stories of gay times when he turned apparent defeat or an insufferable situation into a genuine laugh. He loved to see dignity "debunked"—and many a psuedo expert felt the sting of his penetrating wit and humor.

Typically American beneath the broad humanitarian aspect and love of fun, ran a deep vein of kinship and sympathy for the under-privileged. To many thousands of unfortunate boys in Chicago's poor districts George Hughes is "father of Chicago Boy's Club," an organization dedicated to reclaiming neglected youth for good citizenship. He served as president of this organization for many years, and upon his retirement founded the Chicago Boy's Club Foundation, to assure the perpetuity of the club through an endowment.

Running one of the large electric appliance manufacturing companies took up most of the time of his life—but he would have liked to have been an editor; or he would have liked to spend all his time with boys; not much of his life was spent where he was not helping someone — perhaps his monument is what he contributed to human happiness—and perhaps the millions of hours of freedom from burden that now benefit millions, and that will benefit millions yet unborn.



Worth Waiting For

Each day brings closer the full scale production of Clark Automatic Electric Water Heaters. The pent-up demand for these pioneer electric water heaters has been built up, not alone thru war shortages but by the increasing insistence of the public on really modern hot water service. With a twenty year record for dependability, Clark offers assurance for giving the best of this kind of service. When they are once more available both you and your customer will find them to have been well worth waiting for.

McGRAW ELECTRIC COMPANY
CLARK WATER HEATER DIVISION
5201 W. 65th St. Chicago 38

Subox
ANTI-CORROSIVE PAINTS
favored for
TRANSMISSION
and
DISTRIBUTION DEPARTMENTS
MAINTENANCE
Subox, Inc.
NORTH ARLINGTON, N. J.

He needs your help
So do his buddies
BUY BONDS

to support their bravery and skill that will win the Peace.
Hotel Mayfair
SAINT LOUIS

YOU CAN DEPEND ON

Sepco

1915 - 1944

ELECTRIC WATER HEATERS

ALTHOUGH WAR TIME CONSTRUCTED THEY STILL GIVE THEIR USUAL EFFICIENT, ECONOMICAL PERFORMANCE WITH THEIR LONG LIFE LOW WATTS DENSITY HEATING UNIT, THEIR POSITIVE SNAP ACTION THERMOSTAT AND MOST EFFICIENT HEAT INSULATION MANUFACTURED AND GUARANTEED BY

AUTOMATIC ELECTRIC HEATER CO.

POTTSTOWN, PENNA.

Get Superior Insulating Quality with TOUGH MANNING PAPERS

Here are 6 reasons why Manning 300 All Rag Paper is better:

1. Chemically Pure
2. High Dielectric Strength (300 Volts per Mill)
3. Maximum Toughness
4. Heat Aging Qualities
5. Made from 100% New Cotton Rags
6. High Density

Manning 300 All Rag Paper available from stock in sheets 24" x 36" in thicknesses .007", .010", .015", .020", .025", 1/32", and 1/16". Also furnished in strips and rolls. For more complete information, see page 6 of the IWI Blue Catalog.

Distributed by

INSULATION & WIRES, INC.

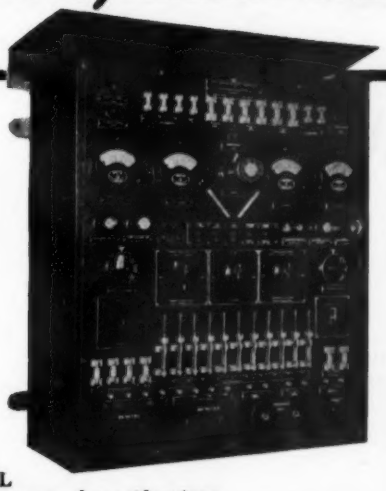
2127 Pine Street, St. Louis 3, Missouri
289 Simpson Street, N. W., Atlanta 3, Georgia
3930 Coleridge Street, Houston 5, Texas

Electrical Specialties

of Every Type

Including MARINE WORK

JMM CO



WORK TEST PANEL
—built to customers' specifications and Navy standards.

RADIO MOTOR-GENERATOR and SELECTOR CONTROL PANEL
—built to customers' specifications for any number of circuits.

ALL types of electrical specialties, boxes, cabinets, control panels, duct-work, etc., manufactured by an organization accustomed to meeting exacting Army, Navy and Commercial specifications. Full engineering personnel and equipment for manufacture of special electrical items to customers' needs in addition to all standard articles. Let us quote you on your requirements. Write for illustrated catalog.

ARMY E NAVY

JACKSONVILLE METAL MANUFACTURING CO.

247 RIVERSIDE AVE., JACKSONVILLE, FLORIDA

Record Breaking Orders *Prove Trade Acceptance*

Lloyd New Automatic Starter

In the New RED PLASTIC Can

UL Submitted to Underwriters' Laboratories Inc., for approval.

ETL Submitted to Electrical Testing Laboratories, Inc., for certification.

PAT. NOS. 2200443 - 2228210

Locks Out---Resets Automatically

1. Positively cuts out deactivated, flickering, blinking lamps.
2. When trouble is detected the starter automatically cuts off current to the ballast and lamp.
3. Gives long life to ballast because defective lamp is locked out. Prevents overheating.
4. When Lloyd AUTOMATIC locks out defective lamp—Turn off the current—Remove defective lamp—Put in a new lamp. Allow at least one minute to make the above change of lamps. Turn on the current. The starter automatically lights the new lamp. NO NEED TO DO ANYTHING TO STARTER.
5. Lloyd NEW PLASTIC CAN has higher dielectric strength, is stronger, lighter, distinctive.
6. Knurled rim on plastic can insures positive grip for insertion and removal of starter.
7. Plastic can is sealed. No projecting lugs to cause trouble.
8. The life of the AUTOMATIC starter is many times greater than that of the average lamp.
9. It saves maintenance costs and power consumption, protects and insures longer life to the ballast and lamp.
10. Tested in production and prior to shipment to insure perfect performance.

LLOYD PRODUCTS COMPANY

Dept. ES-10 Providence 5, R. I.
Representatives in 23 Leading Cities.
Export Office 13 E. 40th St., N. Y. C.

Index of ADVERTISERS

The Advertiser's Index is published as a convenience and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

A

Adam Electric Co., Frank 8
Aluminum Co. of America 25
American Coolair Corp. 7
American Steel & Wire Co. ..... *
Anaconda Wire & Cable Co., Inc. 6
Automatic Electric Heater Co., Inc. 66

B

Briegel Method Tool Co. 57
Bryant Electric Co. ..... *
Bull Dog Elec. Products Co. 47
Burndy Engineering Co., Inc. 41

C

Clark Water Heater Division 64
Crescent Insulated Wire & Cable Co. ..... *
Curtis Lighting, Inc. ..... *

D

Dolph Co., John C. 63

E

Edison General Electric Appliance Co. 39
Efficiency Elec. & Mfg. Co. 59
Electric Companies Advertising Program 2
Electric Vacuum Cleaner Co., Inc. 5

F

Federal Electric Products Co., Inc. 43
Frigidaire Division 29

G

General Cable Corp. ..... 33 and 34
General Electric Co. (Appliances) ..... *
General Electric Co. (Flamenol) 52
General Electric Co. (Lamps) ..... *
General Electric Co. (Wiring Materials) ..... Back Cover
George Co., P. D. 59
Graybar Electric Co. ..... *
Greenlee Tool Co. 55

H

Hazard Insulated Wire Works 1
Helwig Company 58
Hill-Shaw Company 61
Holdenline Company ..... *
Hotel Lennox ..... *
Hotel Mayfair 64
Hubbard & Company ..... *
Hunter Fan & Ventilating Co., Inc. ..... Front Cover

I

Ideal Commutator Dresser Co. 61
Insulation & Wires, Inc. 65

J

Jacksonville Metal Mfg. Co. 65
Johns - Manville ..... *

K

Kelvinator Division ..... *
Kreuger & Hudepohl 62

L

Landers, Frary & Clark 51
Lloyd Products Co. 66

M

M. & W. Electric Mfg. Co. ..... *
McGill Manufacturing Co. 60
McGraw Electric Co. 64
Mitchell Mfg. Co. 3

N

National Elec. Products Corp. 67
National Varnished Products Corp. ..... *
Norge Division ..... 44 and 45

O

Okonite Company 1
O. Z. Electrical Mfg. Co. 60

P

Paragon Electric Co. 58
Pass & Seymour, Inc. 37
Penn-Union Electric Corp. 54
Premier Division 5
Proctor Electric Co. Division 49

S

Schwitzer-Cummins Co. 63
Square D Company ..... *
Sticht Co., Inc., Herman A. ..... *
Subox, Inc. 64
Sylvania Elec. Products, Inc. ..... *

T

Thomas & Betts Co., Inc. 56

U

United States Rubber Co., Inc., (Tape Division) ..... *
United States Rubber Co., (Wire Division) 17
United States Steel Corp. ..... *

W

Walker Brothers ..... *
Ward Leonard Electric Co. 63
Westinghouse Elec. & Mfg. Co., (Apparatus) ..... Inside Front Cover and Inside Back Cover
Westinghouse Elec. & Mfg. Co., (Appliances) 31
Westinghouse Elec. & Mfg. Co., (General) ..... *
Westinghouse Elec. & Mfg. Co., (Lamps) ..... 26 and 27
Weston Electrical Instrument Corp. ..... *
Wiegand Co., Edwin L. 57

Y

Youngstown Sheet & Tube Co. 4